

SMITHSONIAN INSTITUTION

Budget Justifications for Fiscal Year 1991



Submitted to the Committees on Appropriations

Congress of the United States

January 1990

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SMITHSONIAN INSTITUTION

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Cooper-Hewitt, National Museum of Design**
Hirshhorn Museum and Sculpture Garden**
International Gallery
National Air and Space Museum**
National Museum of African Art**
National Museum of American Art**
Renwick Gallery**
National Museum of American History**
National Museum of Natural History/
National Museum of Man**
National Support Center**
National Portrait Gallery**
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Program
Office of Congressional Liaison
Office of International Relations
Office of Special Events
Smithsonian Resident Associate
Program

SMITHSONIAN INSTITUTION

FISCAL YEAR 1991 ESTIMATES OF APPROPRIATIONS

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SMITHSONIAN INSTITUTION
FY 1991 BUDGET REQUEST
(\$000's)

<u>APPROPRIATION</u> <u>ACCOUNT</u>	<u>FY 1990</u> <u>APPROPRIATION</u>	<u>FY 1991</u> <u>REQUEST</u>
Salaries and Expenses	\$225,479	\$256,174
Repair and Restoration	26,468	28,656
Construction	8,320	16,189
Zoo Construction	<u>6,423</u>	<u>6,671</u>
 TOTAL	 \$266,690 ¹	 \$307,690

INTRODUCTION

Visitors to the Smithsonian are consistently impressed by its numerous buildings, its well-maintained gardens, its exhibit halls, its theaters and lecture halls, and its several public cafeterias, including the recently completed Wright Place in the National Air and Space Museum. The Institution's managers constantly maintain, renovate, improve, and replace these facilities to reverse the ravages of time and heavy use. Moreover, the Institution recognizes its responsibility to reinvest not only in the infrastructure of bricks and mortar but also in the infrastructure of programs conducted within these building, halls, and theaters.

FY 1991 is a year in which the Smithsonian plans to initiate a multi-year program of reinvestment in its foundations to obtain greater future yields in the increase and diffusion of knowledge among the American people and the peoples of the world.

FY 1991 BUDGET PRIORITIES

The Smithsonian Institution's request for all operating and capital budget accounts in FY 1991 totals \$307.7 million, or \$41.0 million over the FY 1990 base.

SALARIES AND EXPENSES:

The Salaries and Expenses (S&E) request of \$256.2 million and 4,630 workyears represents an increase of \$30.7 million (net of redirections) over the FY 1990 appropriation. The Institution's various program and operating infrastructure requirements were the central theme in its budget deliberations for FY 1991 and represent \$7.5 million of the requested increase. The Institution has, however, selected two principal themes for new program initiatives--Global Change Research and Cultural Pluralism--as exceptions, since each responds to a clear national and public imperative. These initiatives represent \$8.3 million of the request, including \$6.5 million related to the National Museum of the American Indian. As part of the FY 1991 S&E budget, the Institution requests that a total of \$22.9 million remain available until expended to support the instrumentation program (\$5.8 million); collections

¹ Reflects final Gramm-Rudman-Hollings reductions totaling \$3.452 million.

acquisition (\$1.2 million); Museum Support Center equipment and move (\$3.3 million); exhibition reinstallation (\$1.0 million); the National Museum of the American Indian and the repatriation program (\$11.6 million).

STEWARDSHIP OF THE PUBLIC TRUST:

Review of the resource requirements necessary to carry out the public trust and to achieve the Institution's goals makes it evident to Smithsonian management that the majority of these requirements do not represent new or expanded service levels. Instead, most of these requirements constitute a growing backlog of resource deficiencies that have reached critical proportions. These deficiencies now jeopardize the Institution's ability to manage the National Collections it holds in trust for the American people and its ability to increase knowledge and understanding among future generations. During FY 1991 budget deliberations, the Institution grouped like deficiencies throughout various Smithsonian bureaus and offices into several broad categories in an effort to portray the magnitude of these deficiencies. Table 1 provides a summary of the \$7.5 million and 41 workyears the Institution is requesting for various infrastructure requirements in FY 1991 and shows the remaining need the Institution intends to address in future budget years. Following the table is a category-by-category explanation of the importance of beginning to address these catch-up requirements.

TABLE 1
RESOURCES REQUESTED FOR FY 1991 FOR INFRASTRUCTURE
COMPARED TO THE UNFUNDED BACKLOG OF REQUIREMENTS

Infrastructure Bundle	FY 1991 Requested Increases		Unfunded Requirements Backlog	
	FTE	\$000	FTE	\$000
Reinstallation of Permanent Exhibit Halls	1	\$900	15	\$5,247
Human Resource Management	9	426	9	668
Audit Deficiencies	9	260	9	418
Information Systems	9	1,228	42	6,753
Space Deficiencies	1	248	1	1,336
Major Scientific Instrumentation	12	4,400	Not Applicable	
Conservation of Library and Archival Collections	0	0	89	6,167
Library and Collections Acquisition	0	0	1	2,588
Collections Management	0	0	101	9,233
Clerical Support Staff	0	0	40	1,142
Specialized and Technical Staff and Support Costs	0	0	144	5,932
Laboratory and Scientific Equipment (Non-Computing)	0	0	2	2,506
Computers (Hardware)	0	0	3	2,250
Facilities Maintenance Deficiencies	0	0	136	8,010
Health and Safety of Staff and Visitors	0	0	18	1,305
Security of Facilities and Collections	0	0	136	6,527
	-----		-----	
Total	41	\$7,462	746	\$60,082

Reinstallation of Permanent Exhibit Halls - The Smithsonian receives visitors from all over the world who come to be enlightened, educated, and inspired. The Smithsonian is the "National" museum and, as such, has a public responsibility to reflect current concerns and perceptions of the Nation and the world.

After years of good service, "permanent" exhibitions become obsolete, both in their interpretive or presentation strategies and in their interest to the public. Many of the Institution's exhibitions have long outlived the timeliness and accuracy of their content, and funding for upgrading or replacement has not been available. Moreover, few Smithsonian museums have had the funding to incorporate new exhibition techniques, such as laser discs and computers, that increase understanding among a museum-going constituency increasingly experienced in these methods and expecting their use. These new technologies also enable museums to explain exhibits in less space by reducing the area devoted to lengthy descriptive labels.

In order to revitalize exhibits that are now decades old and to increase the accuracy of their content, the Smithsonian is asking for a no-year appropriation of 1 workyear and \$900,000 in FY 1991. This amount will allow two museums to increase their exhibition base funding for an extended program of phased replacement of the oldest exhibit halls. These funds will support technical upgrade, intellectual refurbishment, or total replacement of existing, outdated "permanent" exhibitions within the National Museum of Natural History and the Freer Gallery of Art. This funding will guarantee that the information and presentation of Smithsonian exhibits reflect contemporary interests and achievements. In future years, the Institution will request an additional \$5.2 million per annum to undertake the reinstallation of the various exhibit halls that are outdated.

Human Resource Management - In its May 1989 report, Improving Personnel Operations and Policies, the National Academy of Public Administration (NAPA) urged that, for the Smithsonian Institution's long-term organizational health, its personnel office be transformed from a "procedures and process" operation to an organization that provides leadership in managing the Institution's human resources. To that end, the Academy recommended that the Office of Personnel Administration be responsible for human resource planning and budgeting, personnel policy development and administration, management and supervisory training, oversight, and related information systems. The Academy went on to reaffirm that with these responsibilities come greater effectiveness and accountability.

To achieve prerequisite efficiency and effectiveness, the report made many recommendations pertaining to day-to-day operations. In addition, the Academy pointed out that the ratio of employees served to personnel staff was well above the ratio recommended by the President's Council on Management Improvement. This finding confirmed the general perception both within and outside the personnel office that it is understaffed.

To implement the recommendations in the NAPA and other reports on the Institution's human resource management infrastructure, the Institution seeks additional resources of 9 workyears and \$426,000 in the FY 1991 budget. The Institution will seek an additional 9 workyears and \$668,000 in future years to meet the remaining requirements for human resource management.

Audit Deficiencies - The Smithsonian maintains a strong program of audit and review of its financial and program activity. In addition to the triennial review of internal controls, an outside certified public accounting firm performs an annual

financial audit. The Smithsonian Office of the Inspector General performs financial and program audits on a regular cycle, and the Government Accounting Office and other agencies perform special audits from time to time.

These reviews and audits identify deficiencies in internal controls, policies, and procedures; in compliance with internal and external requirements; and in meeting the needs of the public. Additionally, they identify areas where efficiency improvements are possible. By implementing the recommendations from these audits and reviews, the Smithsonian improves internal controls; limits the potential for waste, fraud, and abuse; and becomes more effective in meeting public needs and more efficient in carrying out its programs. Implementing recommendations to eliminate such deficiencies represents an investment with an expected and important return.

For FY 1991, the Institution is requesting 9 workyears and \$260,000 to eliminate its most critical audit deficiencies. Bureaus have identified a remaining less critical backlog of 9 workyears and \$418,000 needed annually to eliminate all known audit deficiencies.

Information Systems - In early 1989, the Office of Information Resource Management held an Institution-wide planning symposium to assess the state of Information Resource Management (IRM) in the Institution and to initiate an ongoing process for IRM planning and development. Through formal presentations, discussion groups, and critiques, users and providers of information services gained a comprehensive overview of information handling and services. In the course of discussion, attendees identified an urgent need to focus IRM efforts on the solution of the most pressing systems development and service delivery requirements, including systems for the management of museum specimens and objects and bibliographic and archival materials. It also became clear that the resources available for information-related services are inadequate to provide the up-to-date technologies, systems, and communications necessary for the conduct of Institutional activities.

In the short term, the Institution must allocate resources to meet three objectives:

- to allow access to collections management, research, public service, and administrative information;
- to develop, design, implement, and maintain computer systems;
- to define how information technologies can be used to meet established goals.

The unique role of the Smithsonian in education and research is in jeopardy. Its accessibility as a resource to researchers worldwide and its public status are diminishing. Increasingly complex research, education, and business demands for information exceed the capabilities of the Institution's existing technologies. To reclaim its position as a leader in research, education, and collections and to remain accountable as a public trust, the Smithsonian must have the resources to utilize appropriate advanced information technologies.

The Institution is requesting Federal funding of 9 workyears and \$1.2 million to address its most pressing needs for information systems. Bureaus have identified a backlog of an additional 42 workyears and \$6.8 million for other systems.

Space Deficiencies - Historically, the Institution has housed administrative and other central support functions in museum buildings on the Mall. With the growth of collections, research, and public programs, however, space in museums has gradually become very limited. Increasingly, the Institution has relied on leased space (in buildings convenient to Mall activity) to house administrative functions. There are two primary centers of off-Mall support: L'Enfant Plaza for administrative functions, and the Service Center on North Capitol Street for light industrial, warehouse, and technical support.

The Institution presently leases 99,000 square feet of space at L'Enfant Plaza for accounting, personnel, publications, design and construction, and procurement and contracting functions. The Institution uses both Federal and Trust resources to pay for the rental space in direct proportion to the number of Civil Service and Trust employees in each office. The Institution anticipates additional need for leased space as buildings on the Mall must accommodate growth in public programs.

The Institution's Service Center on North Capitol Street contains about 165,000 square feet of space. However, the Institution needs a Service Center of approximately 350,000 square feet to house all related activities in one place and to free space on the Mall for public programs. The Institution is examining options for a lease-purchase agreement on a suitable facility and will require additional funding for an alternative facility, possibly as early as FY 1992.

For FY 1991, however, the Institution requires 1 workyear and \$248,000 to administer and pay the costs of additional leased space for its current programs.

Major Scientific Instrumentation - A major portion of the Institution's request for additional funding for research will enable the Smithsonian Astrophysical Observatory (SAO) to continue two important projects involving the development of new and the reconfiguration of existing instrumentation. The Smithsonian request for FY 1991 includes an increase of \$4.4 million for these two projects. The construction of the submillimeter telescope array will allow SAO scientists to study more effectively the formation of stars and planetary systems and the puzzling processes taking place in the cores of galaxies and quasars. The conversion of the Multiple Mirror Telescope (MMT) to a telescope with a single 6.5-meter diameter mirror will enable SAO to gather data on objects much fainter than is currently possible and to study more than twice as much of the universe.

Conservation of Library and Archival Collections - The Smithsonian's archives and libraries--books, documents, films, photographs, and recordings--are national resources. Their words and images are fuel to generate energy in the powerhouse of knowledge and understanding. Some are renewable; many unique ones are not. All are fragile; all deteriorate with use. Conservation and sustained investment are essential to maintain them. Replaceable items must be replaced; unique ones must be preserved. If the Smithsonian does not replace and preserve these items, it only hastens their deterioration, destruction, and depletion. Deferred investment simply intensifies a growing national debt of future replacement and renewal costs. Conservation is not a one-time need; it represents an essential sustained capital investment. Each year that the investment is not up to optimum levels accelerates cumulative deterioration, increases total cost and total lost, and makes it ever more difficult to recover these collections.

The Institution has identified an unfunded backlog of 89 positions and \$6.2 million needed annually for the ongoing conservation of library and archival collections.

Library and Collections Acquisition - Modern researchers are dependent on the availability of published results from colleagues. The most utilized and timely source of such information is scholarly journals. The more than 40,000 journals in the sciences reflect the incredible degree of specialization in the scientific fields alone. Thus, an active scholar in a scientific discipline (e.g., molecular biology) can no longer simply read one or two of the scores of specialized journals available. To scientists and scholars, immediate access to the full range of scholarly literature is as important as research equipment.

The relative weakness of the dollar against foreign currencies has resulted in the escalation of subscription costs for many of the foreign journals upon which Smithsonian scientists and scholars rely. The Institution has in recent years attempted to maintain its current level of service by cancelling some of the lesser-used journals, taking advantage of interlibrary loans, and utilizing private document delivery services. Although the Institution has vigorously pursued these options, journals dealing with such pivotal international issues as global change and molecular genetics are not a regular part of the Institution's journal base. Hence, the Institution needs new resources to ensure that its scholars have regular access to information in those fields in which advances are occurring. The Smithsonian Institution Libraries manages the collection of periodicals for the entire Smithsonian community and for various related agencies represented within the Institution, including the United States Geological Survey, Fish and Wildlife Service, Department of Agriculture, and National Oceanic and Atmospheric Administration. Without access to scholarly journals, Smithsonian staff cannot conduct research in critical areas of national interest ranging from global warming to embryo transfer and space research.

The Institution has identified a backlog of 1 workyear and \$2.6 million needed annually to address deficiencies in library acquisitions and acquire other collections resources.

Collections Management - The Smithsonian is not the "Nation's attic" as much as it is the "Nation's treasure chest." The care of collections is a sacred responsibility to the American public now and for future generations. With proper care, the National Collections can continue to offer future scholars valuable opportunities for study that cannot be envisioned today.

However, collections care is technical, tedious, and never complete, for the standards of care continuously increase as the museum profession learns more about the composition of objects and the effects of environment. The Institution has spent considerable sums to improve the registration, storage, restoration, and conservation care of objects and is proud of demonstration projects such as the Collections Information System (CIS) and the Museum Support Center. Despite advances such as these, responsibility for the care of collections escalates as they grow and age. Research on new preservation techniques and related advancements and automation make collections care an increasingly complex and expensive endeavor. For FY 1991, the Institution is requesting a no-year appropriation to continue the equipping of and move of collections to the Museum Support Center. The Institution must begin installation of collections into the storage units that will be ready to receive them. As additional resources become available, the Institution also must make technical improvements in the management of collections in the National Museum of American

History and the National Portrait Gallery; make progress on the herculean conversion of the records of the National Museum of Natural History; and take advantage of the closing of the Freer Gallery of Art to bring its collections storage and conservation systems up to modern standards. To fulfill public responsibilities to the "Nation's treasures," the Smithsonian must maintain a program of adequate care for the collections entrusted to it.

To supplement base resources, an additional 101 workyears and \$9.2 million annually have been identified as a backlog requirement for addressing collections management deficiencies.

Clerical Support Staff - Over the past years, growth of public demands and programs at the Institution has resulted in a deficiency in clerical support. Productivity in many programs would increase measurably if additional clerical support were available to scientists, curators, and other museum specialists. The shortage of clerical support slows the Institution's progress in addressing critical programmatic imperatives such as global environmental change research and cultural diversity.

The shortage in clerical support is most evident at the Smithsonian Tropical Research Institute (STRI). As the Institute expands its biological research in forest dynamics and canopy biology, scientists will require additional clerical support so they can focus on research rather than spend time on clerical tasks. STRI has identified clerical support needs totaling 19 workyears and \$500,000 and must correct this shortage in the near future. At the same time, shortages in clerical support exist throughout the Institution. Other bureaus reporting shortages include the Joseph Henry Papers, Smithsonian Environmental Research Center, National Science Resources Center, Office of International Relations, Office of Congressional Liaison, and other administrative and support areas. The Institution will require an additional 40 workyears and \$1,142,000 annually in future budget years to eliminate its clerical support deficiency.

Specialized and Technical Staff and Support Costs - Among the Institution's major areas of concern over the past decade has been the closing of selective gaps in its research programs through the recruitment of new professional staff. A related objective has been to provide an adequate level of technical assistance to members of the professional staff so they can be more efficient and productive in the advancement of scholarship and public programming. For too long, many of the highly trained staff within the Institution have had to perform functions best suited to technicians, functions that divert them from their primary responsibilities. In addition to dealing with these deficiencies in existing programs, the Institution must also address the need to staff newly constructed or recently renovated facilities. The teaming of scholars with a proficient technical support staff is essential for the Institution to meet the many challenges facing the Nation in the next few years.

The Institution has identified a need for 144 workyears and \$5.9 million annually. Examples of the programs needing technical staff and support costs are:

- Biomedical Technology: The National Zoological Park (NZP) is developing advanced fields of biomedical technology with particular emphasis on the role of genetics in animal reproduction and physiology. The world's main hope for saving many species of animals from total extinction is the pioneering work performed at NZP in the related areas of embryo transfer and cryobiology.

- Museum Research: In the domain of museum research, the Institution plans a more vigorous professional presence at the National Air and Space Museum (NASM), the National Museum of American History (NMAH), the Cooper-Hewitt Museum, and the National Museum of American Art, especially to take advantage of new collections that have entered their possession within the past five years. The study, preservation, and exhibition of these specialized collections demand a skilled and competent staff. For example, NASM's significant collections in avionics, currently the focus of its Computer Gallery, and the soon-to-be-opened exhibition "The Information Age" at NMAH require staffing within a field that has only recently emerged as a unique sphere of scholarship. In the arts, the Cooper-Hewitt Museum requires additional staff to promote its extraordinary decorative arts collection. The National Museum of American Art requires positions at both the technical and professional levels to meet the pressing need for the cataloguing, study, and exhibition of major 19th- and 20th-century holdings in the American visual arts.
- Research and Public Programming: As steward of the National Collections and important natural research areas, the Institution commits itself to the proper guardianship of its holdings as well as to the research and public programming that derive from these unique resources. The selective addition of staff will allow the Smithsonian to meet these trust obligations on behalf of the world's citizens, advancing scholarship and public understanding with the prudence and discernment for which the Institution is renowned. Within the National Museum of Natural History (NMNH), the Institution's largest biological bureau, the total ratio of technicians to research staff has been woefully inadequate for more than a decade. Future requests will seek to redress this imbalance in the interests of facilitating and improving scholarship in global change research and other significant fields of national interest.
- Theoretical Astrophysics: At the Smithsonian Astrophysical Observatory (SAO), filling gaps in the field of theoretical astrophysics is crucial to supporting advances in ground-based and space-borne astronomy. In addition, an infusion of more junior staff into the ranks of the research community will ensure continuous representation of the latest thinking within the varied fields that constitute astrophysics.
- Global Change: At the Smithsonian Tropical Research Institute (STRI), the opening of a new laboratory on Barro Colorado Island, with its research programs on global change, requires new technical assistance as well as increased professional strength. For the past two decades, STRI's scholarly community has had virtually no technical support staff. The Institution must take remedial action to correct this deficiency. New staff, and the attendant costs, will sustain and reinforce the vital study of global change and tropical rain forest canopy biology.

Laboratory and Scientific Equipment - The Smithsonian is not exempt from the difficulties faced by other research institutions in overhauling an obsolete research infrastructure. The availability of up-to-date research equipment is a basic necessity for scholars to remain competitive with their peers worldwide. In this respect, one significant difference between the Institution and universities is its inability to obtain National Science Foundation funding for this purpose. Thus direct Federal funding is essential. Failure to obtain necessary equipment will seriously impair the Institution's ability to meet crucial objectives in global environmental

research. In the end, new facilities and talented scholars will be left without the opportunity to make full use of their skills.

For the past six years, the Institution has placed major emphasis on improving its research facilities. It is not sufficient, however, to provide scholars with new or renovated space without also supplying them with the attendant tools of their trade: research equipment. All the Institution's research bureaus and research support offices have prepared equipment acquisition and replacement plans detailing their requirements over the next decade. In the process it has become clear that, in an era in which research equipment has become increasingly sophisticated and is rapidly superseded by technological advances, much of the Institution's equipment inventory is obsolete. The Institution has systematically begun to rebuild the critical infrastructure requirements of laboratory and scientific equipment in selected areas.

The Institution must also acquire equipment for the new Barro Colorado Island laboratory, where existing equipment is more than 20 years old. The National Zoological Park requires equipment to take advantage of the rapid advances in the biomedical field for the study and care of endangered species. The Conservation Analytical Laboratory requires resources to replace equipment purchased or obtained more than a decade ago, some under excess property guidelines. The Museum Support Center requires new equipment to complete the furnishing of its modern Laboratory for Molecular Systematics. In future years the Institution will require an additional 2 workyears and \$2.5 million annually to ensure it has an adequate base to replace its scientific equipment on a regular basis.

Computers - The computer is an indispensable tool for the production and dissemination of research. Scholars increasingly use computers to communicate through networks that provide bibliographic information, store research data, and prepare, or even publish, manuscripts. Due to limited resources, the Smithsonian has been unable to realize fully the potential of computer technology for increasing efficiency and productivity in the scholarly realm. The Institution now seeks to purchase, install, and create effective computer networks for all its scholars, not just those in bureaus that have made some progress in this area. The Institution will seek to replace and upgrade computers, software, and networks for bureaus already using computer technology. The Institution must also implement a computer acquisition program for small bureaus that lack even rudimentary computing equipment.

The Institution has identified computer needs that will require an additional 3 workyears and \$2.3 million annually.

Facilities Maintenance Deficiencies - The Smithsonian owns, operates, repairs, and maintains more than five million square feet of space in more than 200 buildings. These buildings range in age from new to more than 140 years old, and many appear on the registers of historic landmarks. Many are, in fact, among the most precious "artifacts" the Smithsonian holds in trust for the Nation. The Smithsonian must operate and maintain these buildings to ensure the continued functioning of its many diverse programmatic activities and to preserve them for use by future generations.

The Institution has identified a backlog of essential maintenance and repair projects last estimated at \$229 million. By increasing staff and equipment for facilities maintenance, the Institution will slow the rate of deterioration of its buildings and thus slow the rate at which new repairs add to the backlog. Additional staff for facilities maintenance will also ensure timely completion of the Repair and

Restoration of Buildings projects. Custodial staff will improve the cleanliness of the interiors, and gardeners will maintain the grounds around the buildings in the manner appropriate for important and highly visible public buildings in the Nation's Capital. Support staff for the Education Center in the Quadrangle will ensure maximum utilization of this important resource for public programs.

While not requesting an increase for FY 1991, the Institution has identified an annual requirement of 136 workyears and \$8.0 million.

Health and Safety of Staff and Visitors - The Institution is concerned about the health and safety of its staff and visitors. In recent years, Congress has allocated resources for a solid foundation for an environmental management and safety program. Staff members are now available to assess environmental and safety hazards of the physical plant and to identify necessary changes to buildings or work practices. The Institution needs resources, however, to carry out these changes, particularly at the bureau level. Staff of the Office of Environmental Management and Safety is developing programs required by law or regulation to inform and protect employees who work with dangerous chemicals or are exposed to hazardous conditions and to identify fire or safety risks in the workplace and public areas of Smithsonian buildings. Additional resources will allow coordination of these efforts at the bureau level and ensure that the laboratories and offices throughout the Institution carry out the safety programs.

An occupational health program is also in place, but the Institution will soon need additional resources to meet statutory obligations to staff. Presently the Smithsonian is unable to meet several mandatory requirements for health monitoring of all employees exposed to hazardous materials or working under extreme physical conditions. Additional funds will increase the number of physical examinations and streamline the medical records essential to such a program to make them more useful in a number of contexts. The Smithsonian has established programs in wellness and substance abuse, but these programs will also require increased support. Additional resources will make counseling services available to more employees whose personal problems are interfering with their well-being and job performance. Without these resources, the Institution will fail to meet the government standard for occupational health care for its more than 5,000 employees.

The Institution will require an additional 18 workyears and \$1.3 million annually to correct all known health and safety deficiencies.

Security of Facilities and Collections - The Smithsonian has more than 136 million items in its collections, on display in exhibitions, or in storage. In addition to the very high intrinsic value of objects such as gems and coins, most of the objects are irreplaceable examples of human experience and achievement as well as global development and change. The collections are stored within the museum buildings on the Mall, at specially designed storage facilities in Suitland, Maryland, and in some leased warehouses in Washington, D.C., Virginia, and elsewhere around the United States. In addition, the Institution has research facilities in a number of remote locations in Panama and Arizona. Security in Smithsonian facilities consists of a complex combination of alarm systems throughout the buildings and physical surveillance by guards at entrances and in public galleries.

In the past several years, serious erosion of base resources to support the security program has undermined the Institution's ability to provide adequate protection for its collections and facilities. The political situation in Panama has

also diverted Mall-based security resources to protect the Smithsonian Tropical Research Institute staff and properties. In recent years staffing shortages have caused the periodic closing of exhibit galleries when guards were not available for full coverage. This solution interferes with the public's enjoyment of the exhibitions and activities presented at the various museums and with achievement of the Smithsonian's mission to increase and diffuse knowledge. The alternative is a reduction in security coverage, which places the collections and public property at an unacceptable level of risk of loss or irreparable damage. The Office of Protection Services must hire additional guards for galleries, entrances and exits, and grounds and must replace or maintain communications and security systems vital to the effectiveness of the security force.

The Institution has identified a backlog in security totaling 136 workyears and \$6.5 million annually.

INITIATIVES IN RESPONSE TO NATIONAL IMPERATIVES:

Global Change Research - During the past three years, countless studies and testimony have been presented before Congress and scientific groups concerning the effects of natural and human activities on the global environment. A recent report by the National Academy of Sciences serves as the best summary of the current situation. Rapidly evolving changes in the global environment have captured the attention of scientists, policy makers, and citizens around the world:

- the increase of atmospheric greenhouse gases such as carbon dioxide, methane, and the chlorofluorocarbons;
- the expected consequent changes in global climate and sea level;
- a global depletion of stratospheric ozone, and the observed Antarctic "ozone hole";
- widespread desertification and reduction in the diversity of plant and animal species;
- extensive damage to mid-latitude forests;
- acidification of lakes and soils in many regions.

At the least, these changes have far-reaching and potentially disruptive implications for the world's natural resources. In the worst case, the changes collectively threaten the life-support system of the earth. The problem of global environmental change is crucial and urgent.

The Smithsonian Institution is ideally positioned to undertake important research initiatives in the field of global change by building upon its current programs. With more than 150 scientists in a variety of biological and physical science disciplines (coupled with its stewardship over large, protected areas in both the tropical and temperate zone), the Institution can undertake comparative studies to assist in understanding the complexities of this global problem.

For more than 20 years, the Institution's International Environmental Science Program has been monitoring both biological and physical processes, and it currently possesses an incomparable set of data for both tropical and temperate sites. The

proposed enhancements to this program, in conjunction with proposed research initiatives at both the Smithsonian Tropical Research Institute (STRI) and the Smithsonian Environmental Research Center (SERC) will exploit and build upon the unique data already in the possession of the Institution. The permanent nature of the Smithsonian's study preserves at STRI and SERC fit the criteria for global monitoring centers cited in the National Academy of Sciences Report and endorsed by the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) Committee on Earth Sciences.

In addition to studies dealing with biological and physical processes, the National Museum of Natural History (NMNH) will expand ongoing research on biological diversity in tropical Latin America to additional rain forest sites. NMNH will emphasize multi-disciplinary study of organisms and their reaction to broad processes of global change. Recent studies have conclusively determined that, without an integrated and multi-disciplinary approach to this issue, scientists will be unable to find adequate solutions for arresting environmental degradation.

The information that the Institution will generate as the result of proposed initiatives in global change research will be broadly available to policy makers and members of the scientific community. These scientific findings are also certain to form the basis for exhibitions in the National Museum of Natural History, the National Air and Space Museum, and other venues for public programming. The Institution's proven ability in sustaining long-term research at permanent sites is a crucial function that distinguishes the Smithsonian from Federal organizations and most universities involved in such research.

For FY 1991, the Institution is requesting 14 workyears and \$1.0 million to undertake various research inquiries to assist in understanding the phenomenon of global environmental change.

Cultural Pluralism - The demographics of the United States are changing, and the pluralism of our country is ever more evident. What has been the dominant cultural group will no longer be the majority in our work force and our schools. This change and the exciting self-pride that minority groups are exerting calls for new responses on the part of the Smithsonian to be more sensitive in its public programs, hiring practices, training opportunities, exhibition presentations, and collections acquisition. As a national institution, the Smithsonian must assume a viewpoint that is deliberately inclusive in all respects.

The Smithsonian has much work to do if it is to continue to advance this "national imperative." The Institution must create exhibitions and programs that rethink the relationship between the indigenous peoples and the New World conquerors. The Columbus Quincentenary Program provides this opportunity. It will celebrate the accomplishments of minority people and make known to others the richness of their history. The Smithsonian must assist in training minority people who wish to enter the Smithsonian's professional work force and increase the number of trained minority people in the museum profession at large. The Institution must be sensitive to the wishes of the native-American communities for their human remains. It must plan for the new National Museum of the American Indian (NMAI) and make it a reality, particularly through preparing native-American staff to assume positions of professional leadership within the new museum. In addition to these efforts, the Smithsonian must make sure that its programs and exhibitions welcome all peoples.

This is an exciting time. The Smithsonian is working on many fronts to reflect with accuracy and enthusiasm the new and forgotten realities of neighbors, immigrants, and indigenous peoples. For FY 1991, the Institution is requesting 103 workyears and \$7.3 million to undertake various initiatives that will broaden the cultural diversity of its public programs.

FACILITIES:

Construction - The Smithsonian's request for the Construction program for FY 1991 totals \$16.2 million. Consistent with its emphasis on ensuring an adequate infrastructure for current programs and services, the Institution is requesting a funding level that accurately represents its real short-range needs. Within the request are \$4.0 million for minor construction, alterations, and modifications to existing buildings to meet the changing requirements of current programs, and \$1.0 million to conduct detailed planning for future construction projects.

The remaining \$11.2 million is for planning, design, or construction for a number of pressing projects on the immediate horizon. Within this amount is \$8.1 million related to the National Museum of the American Indian, \$1.5 million for the Natural History Building East Court "in-fill" project, and \$1.6 million for a floating laboratory for the Smithsonian Tropical Research Institute. This list of projects represents the Institution's most pressing new space requirements taken from a ten-year construction plan designed to address systematically a variety of space and program deficiencies.

Construction and Improvements, National Zoological Park - The request for the construction program at the National Zoological Park for FY 1991 is \$6.7 million. The request includes \$2.7 million to fund the highest priority repair and restoration projects at the Rock Creek Park site and Front Royal, Virginia. The remaining \$4.0 million includes \$3.3 million to continue the implementation of the Rock Creek Master Plan and \$.7 million for the Front Royal Development Plan.

Repair and Restoration of Buildings - The Smithsonian is requesting \$28.7 million for the Repair and Restoration account. The Institution must continue to eliminate the substantial backlog of deferred maintenance and repairs in its various facilities and protect the integrity of its physical infrastructure. Within this amount is \$13.9 million for the Major Capital Renewal program and \$14.7 million for Repair, Restoration, and Code Compliance projects. The increase in Repair and Restoration funding sought for FY 1991 brings the Institution one step closer to the projected optimal annual level of \$35 million.

NONAPPROPRIATED SOURCES OF FUNDING

In addition to the support provided by Federal appropriations, the Institution receives nonappropriated funds to expand and enrich its programs. The Institution presents nonappropriated fund activities (Trust funds) along with the Federal budget request to provide an overview of all uses of funds for each Smithsonian bureau. The estimates for Trust funds are subject to the uncertainty of donations, grants and contracts, fluctuations in visitor attendance, and the volatility of the economy, the last of which directly affects restaurant, mail order and shop revenues, Associates' memberships, and other auxiliary activities. The Institution's gross operating revenue, less the expenses of the auxiliary activities, represents the net operating revenue available for programmatic and other worthwhile purposes.

The FY 1990 Trust budget comprises approximately 28 percent of net operating revenues. These revenues include grants and contracts received from government agencies. The Smithsonian expects grants and contracts will total nearly \$30 million in FY 1990. The Institution anticipates gross Trust fund revenues, excluding government grants and contracts, will be approximately \$248 million in FY 1990. However, the Institution projects net income will be in the \$61 million to \$62 million range (which includes \$22 million for restricted purposes).

The Trust funds include unrestricted funds, restricted funds, and government grants and contracts, and the Institution applies them in the following manner:

Unrestricted Funds

General - The sources of general unrestricted funds are investment income; unrestricted endowment income; net proceeds from the museum shops, mail order division and food service concessions; sales of Smithsonian books, records, and other products based on designs and objects in the collections; the Resident Associate and National Associate Programs (including the Smithsonian and Air and Space magazines); and overhead recovery on grants and contracts the Smithsonian receives and from internal administrative fees charged to other Trust-funded activities. Overhead recovery is the principal source of Trust support for central management and administrative service units of the Institution, such as legal counsel, accounting, personnel, procurement, and budget. General funds also support various activities, such as the Visitor Information and Associates' Reception Center, the Cooper-Hewitt Museum, Smithsonian Tropical Research Institute, Office of Telecommunications, Office of Folklife Programs, and a variety of Institutional and bureau-based programs. The Board of Regents approves these allotments.

Special Purpose - These funds arise from revenue-producing activities operated by various bureaus and offices. The two largest of these activities are the Theater and Spacearium operations of the National Air and Space Museum. Special Purpose funds also include: miscellaneous revenues from the sale of posters, exhibit brochures, and publications; tuition reimbursement from universities; the museums' share of sales in the restaurant and museum shops; membership and admission fees; exhibit rental income; and investment income from current fund balances.

In FY 1979, the Board of Regents approved the annual transfer of General funds to Special Purpose funds for certain programs previously financed through Federal appropriations. These include the Institution's various fellowship programs (FY 1990 allotments of \$3 million). The Institution also uses Special Purpose funds to make awards under its Collections Acquisition, Scholarly Studies, and Educational Outreach Program. Of the total \$4.98 million approved for the Program in FY 1990, \$1.88 million is available to purchase exceptional objects important to the collections.

During FY 1989, the Smithsonian was able to acquire the George V. Allen Collection of photographs of North American Indians, 1500 photographs and stereocards which enhance the National Museum of Natural History's National Anthropological Archives. The Smithsonian Institution Libraries purchased the Franklin Institute Collection of Trade Catalogs which includes 56,500 items. In addition, the Cooper-Hewitt Museum purchased the Henry and Ludmilla Shapiro Collection of Soviet Porcelain, 99 plates and tableware and 141 figural works crafted between 1919 and the 1980s.

The Institution also has designated \$2.55 million of this Program for innovative scholarly research projects which by definition or because of their schedule do not fit within the Federal budget process. These include multi-disciplinary research projects initiated by the Institution's research staff, sometimes in collaboration with scholars from other institutions. Often the work is of an interdisciplinary nature and is conducted at more than one bureau. For example, this year the Institution awarded a grant for a joint proposal from the Conservation Analytical Laboratory and the Anthropology Department of the Museum of Natural History. This work will use chemical analyses of subfossil vertebrate bones and teeth to advance our understanding of paleodisease diagnosis and contribute to the broader study of paleopathology. In another project utilizing modern technical analyses, researchers will study Iranian metalworks in both the Arthur M. Sackler Gallery and Freer Gallery of Art. Results will illustrate the wide range of manufacture and decoration practiced by early workers from that region. The program also funded a project at the Smithsonian Tropical Research Institute on the domestication and rearing of *Paca*, a species with great potential for providing alternative solutions to the destruction of tropical faunas and floras.

The Institution has allocated the remaining \$550,000 of the \$4.98 million available for this Program to conduct a wide range of educational outreach programs of benefit to the public, with special focus on diverse cultural audiences. The projects that were supported by the Educational Outreach Program for 1989 included a series of activities sponsored by the National Museum of American History (NMAH) in association with the exhibition, "Way to Independence: Memories of a Hidatsa Indian Family 1840-1920," a traveling exhibition organized by the Minnesota Historical Society. Collaborating with a program committee of American Indian people from the three affiliated tribes of North Dakota, NMAH developed a program of multiple outreach and educational activities. The program included a one-day symposium on the present and future history of Mandan/Hidatsa/Arikara people of Fort Berthold, North Dakota; a workshop and performance by the Mandaree Singers of Fort Berthold; a dramatic performance by a Sioux actress based on the life and words of Buffalo Bird Woman, the main character of the exhibition; and a symposium and publication on the development of dams and their affect on American Indian people. As a result of the NMAH program, the Smithsonian is now in a long-term relationship with the Three Affiliated Tribes regarding the program and facilities development for their community museum and for KMHA radio.

In FY 1985, the Board of Regents approved an annual Trust fund allocation for the Special Exhibition Fund (SEF). Although the Institution has generally met the cost of exhibition programs with Federal funds, supplements--including donations from individuals, foundations, and corporations--are increasingly necessary. The Special Exhibition Fund, with \$3.52 million in FY 1990, will provide additional funds for temporary or permanent exhibitions proposed by Smithsonian bureaus that, regardless of scale, are outstanding in terms of their educational value to the public. The Fund gives special consideration to exhibitions that approach content in imaginative ways; that allow bureaus to explore new or expand current interpretive or exhibition

techniques; that are worthy but, by their nature, unlikely to attract private funds; and that are likely to reach previously under-served audiences. During FY 1989 the Special Exhibition Fund helped support planning for the National Museum of American Art's exhibition, American Folk Art: The Herbert Waide Hemphill, Jr. Collection, which will be the first major showing of Hemphill's most significant acquisitions of American folk art spanning the 18th through the 20th centuries. The collection is a wide-ranging index of American folk art that illustrates the distinctly personal viewpoint of a collector which has influenced positive changes in the attitudes of the public and art historians in the field of folk art. SEF also provided partial funding for the National Portrait Gallery's multicultural exhibition: To Color America: The Portraits of Winold Reiss. Winold Reiss was a German-born artist, who painted a significant group of portraits of Native Americans, African Americans, Mexicans and Asians. The exhibition gives the public the opportunity to see these groups realistically portrayed and breaks through stereotypes of the 1920s and 1930s.

Restricted Funds

Restricted Trust funds include gifts, grants, and endowments from individuals, foundations, organizations, and corporations that specify the use of the donation or bequest. Generally, these funds provide support for a particular exhibit or research project. The Freer endowment is the largest restricted endowment in the Institution. Under the terms of the original gift and bequest, this fund is strictly limited to uses benefiting the Freer Gallery of Art.

Government Grants and Contracts

Various government agencies and departments provide grants and contracts for special projects which only the Smithsonian can conduct because of its expertise in a particular area of science, history, art, or education and because of its ability to respond quickly to certain needs.

SMITHSONIAN INSTITUTION

SALARIES AND EXPENSES

Summary of FY 1991 Increases

FY 1990 Appropriation	\$225,479,000 <u>1/</u>
Legislated Pay Requirements	<u>4,125,000</u>
FY 1990 Base	\$229,604,000
FY 1991 Requested Increases	
Uncontrollable Increases	11,157,000
Program Increases	<u>15,413,000</u>
FY 1991 Request	\$256,174,000

1/ Reflects reduction of \$3,074,000 pursuant to Public Law 99-177 and Public Law 101-119 (Balanced Budget and Emergency Deficit Control Act of 1985 and 1987 amendments).

SMITHSONIAN INSTITUTION
"SALARIES AND EXPENSES"
SUMMARY OF THE 1989 APPROPRIATION AND THE 1990 AND 1991 ESTIMATES

(Dollars in Thousands)
FTE= Full-Time Equivalent

FY 1990 BASE

FTE= Full-Time Equivalent													
PAGE NO.	UNIT	FY 1989 ACTUAL			LEGISLATED			FY 1991 ESTIMATE		ANALYSIS OF INCREASE			
		FTE	AMOUNT		APPROPRI- ATION*	PAY REQUIREMENT	TOTAL	FTE	AMOUNT	FTE	UNCONTROL- LABLE	PROGRAM	
RESEARCH													
31	Assistant Secretary for Research	22	1,663	36	1,586	31	1,617	36	1,647	0	30	0	
36	Astrophysical Observatory	104	10,750	110	10,991	176	11,167	125	12,532	15	403	962	
47	Smithsonian Tropical Research Institute	115	5,777	131	5,910	100	6,010	142	6,457	11	341	106	
54	Smithsonian Environmental Research Center	30	1,426	37	1,837	35	1,872	39	2,071	2	49	150	
58	National Zoological Park	339	14,190	349	14,569	327	14,896	354	15,391	5	395	100	
70	Smithsonian Institution Archives	13	592	15	613	13	626	15	639	0	13	0	
72	Smithsonian Institution Libraries	97	5,150	106	5,377	86	5,463	107	5,571	1	108	0	
78	International Environmental Science Program	10	757	13	770	8	778	15	920	2	8	134	
85	Major Scientific Instrumentation	0	836	0	2,147	0	2,147	0	5,765	0	0	3,618	
	Subtotal	730	41,141	797	43,800	776	44,576	833	50,993	36	1,347	5,070	
MUSEUMS													
93	Assistant Secretary for Museums	21	1,699	25	1,231	23	1,254	26	1,487	1	133	100	
98	National Museum of Natural History	537	26,357	585	27,505	593	28,098	593	29,762	8	605	1,059	
111	National Air and Space Museum	224	9,594	227	10,165	222	10,387	228	10,698	1	240	71	
121	National Museum of American History	330	14,446	347	15,218	352	15,570	348	16,024	1	359	95	
128	National Museum of the American Indian	0	0	61	3,946	85	4,031	179	11,618	118	1,051	6,536	
136	National Museum of American Art	114	5,545	122	5,581	111	5,692	123	5,817	1	110	15	
144	National Portrait Gallery	88	4,125	89	4,212	84	4,296	89	4,403	0	82	25	
153	Hirshhorn Museum and Sculpture Garden	72	3,453	78	3,508	70	3,578	78	3,678	0	70	30	
157	Arthur M. Sackler Gallery/Freer Gallery of Art	61	4,296	68	4,331	69	4,400	68	4,668	0	68	200	
165	Archives of American Art	16	1,062	23	1,126	23	1,149	23	1,172	0	23	0	
169	Cooper-Hewitt Museum	28	1,288	32	1,462	26	1,488	32	1,514	0	26	0	
175	National Museum of African Art	49	3,503	58	3,610	52	3,662	58	3,713	0	51	0	
180	Anacostia Museum	14	905	20	1,002	36	1,038	20	1,073	0	35	0	
186	Conservation Analytical Laboratory	39	2,526	42	2,551	49	2,600	42	2,648	0	48	0	
191	Office of Exhibits Central	47	1,886	46	1,937	35	1,972	46	2,006	0	34	0	
194	Smithsonian Traveling Exhibition Service	13	665	17	793	15	808	18	874	1	66	0	
199	Museum Support Center	35	4,405	42	4,263	27	4,290	42	4,316	0	26	0	
	Subtotal	1,688	85,755	1,882	92,441	1,872	94,313	2,013	105,471	131	3,027	8,131	

PAGE NO.	UNIT	FY 1990 BASE						FY 1991 ESTIMATE		ANALYSIS OF INCREASE			
		FY 1989 ACTUAL		APPROPRI- ATION*		LEGISLATED PAY REQUIREMENT		TOTAL	FTE	AMOUNT	FTE	UNCONTROL- LABLE PROGRAM	
		FTE	AMOUNT	FTE	AMOUNT	FTE	AMOUNT	FTE	AMOUNT	FTE	AMOUNT		
PUBLIC SERVICE													
211	Assistant Secretary for Public Service	25	1,391	26	1,452	35	1,487	26	1,640	0	138	15	
218	Smithsonian Institution Press	27	1,214	29	1,269	25	1,294	29	1,391	0	82	15	
223	Office of Folklife Programs	10	809	9	1,027	7	1,034	10	898	1	11	(147)	
228	Academic and Educational Programs	13	836	17	841	15	856	17	846	0	13	(23)	
Subtotal		75	4,250	81	4,589	82	4,671	82	4,775	1	244	(140)	
235	INTERNATIONAL ACTIVITIES	11	740	12	916	13	929	13	990	1	21	40	
243	ADMINISTRATION	291	17,244	349	19,945	394	20,339	384	23,611	35	960	2,312	
FACILITIES SERVICES													
257	Office of Design and Construction	40	2,337	44	2,757	58	2,815	45	2,901	1	86	0	
260	Office of Protection Services	702	22,261	764	23,359	514	23,853	767	24,437	3	584	0	
265	Office of Plant Services	472	37,054	493	37,692	416	38,108	493	42,996	0	4,888	0	
Subtotal		1,214	61,652	1,301	63,788	988	64,776	1,305	70,334	4	5,558	0	
GRAND TOTAL		4,009	210,782	4,422**	225,479	4,125	229,604	4,630**	256,174	208	11,157	15,413	

Note: Workyear estimates are rounded to whole workyears on all tables.

*Reflects the distribution of Gramm-Rudman-Hollings reductions of \$3.074 million, reorganizations, and permanent reprogrammings.
(See crosswalk in the Appendix section.)

**OMB full-time equivalent ceiling is 4,397 for FY 1990 and 4,510 for FY 1991.

SMITHSONIAN INSTITUTION

"Salaries and Expenses"

Report of Appropriation by Objects of Expense

(Dollars in thousands)

	1989 Actual	1990 Base	1991 Estimate	1991 Increase Over 1990
11 Personnel Compensation	\$120,739	\$132,796	\$142,764	\$9,968
12 Personnel Benefits	21,298	26,042	29,022	2,980
13 Benefits to Former Employees	165	146	146	0
21 Travel and Transportation of Persons.	2,029	2,158	2,683	525
22 Transportation of Things	667	816	920	104
23 Rent, Communications, and Utilities	19,955	20,489	25,683	5,194
24 Printing and Reproduction	1,735	1,937	2,007	70
25 Other Services	25,999	24,489	29,485	4,996
26 Supplies and Materials	9,896	10,192	12,400	2,208
31 Equipment	6,290	9,281	9,786	505
Acquisition for Collections	1,920	1,233	1,253	20
41 Grants	83	15	15	0
42 Insurance Claims and Indemnities	5	10	10	0
T O T A L	<u>\$210,781</u>	<u>\$229,604</u>	<u>\$256,174</u>	<u>\$26,570</u>

SPECIAL EMPLOYMENT INITIATIVES

With the Congress' strong endorsement, the Institution has successfully implemented phases I and II of its "Special Employment Initiatives"--the Fiscal Year 1989 "Quick Hire" program and the Fiscal Year 1990 "Step Up 90" upward mobility program. Given ongoing interest in Congress, and in response to recommendations contained in House Report 101-391, The Challenge of Cultural Diversity and Cultural Equity at the Smithsonian Institution, the Smithsonian is requesting from the Congress an additional four workyears and \$248,000 to continue its progress toward diversifying the professional workforce of the Institution.

Phase I was designed to identify and recruit qualified external candidates to professional positions created on a temporary basis. Only three vacancies remain of the twenty-two approved professional positions under the "Quick Hire," and these are being actively recruited. The "Quick Hire" program was so named originally because of the use of appointment authority which enabled the Smithsonian to make temporary appointments up to grade 12 without going through the U.S. Office of Personnel Management, thus shortening the length of time from recruitment to appointment. This authority combined with some temporarily available funds made it a feasible proposition to hire several minority professionals at grades 11 and 12. Since the Congress has now approved making these positions permanent, the last three available slots are being advertised and hired through the normal channels.

The second phase, "Step Up 90," is focused internally and designed to expand on the Smithsonian's upward mobility program in order to give opportunities to already onboard employees. The first six positions will open for recruitment in February 1990 and the last four will be decided upon shortly.

In the Committee on Government Operations' House Report 101-391, The Challenge of Cultural Diversity and Cultural Equity at the Smithsonian Institution, recommendation 3 states:

"The Smithsonian should retain and institutionalize its "Quick Hire" program, as a means to increase and improve Minority employment presence at the Institution. Specifically, the Smithsonian should use this program to target those bureaus and offices where there are presently no minorities in research, curatorial or administrative positions."

In response to this recommendation, Phase III, Affirmative Cultural Transition (ACT), will place four positions in targeted bureaus where underrepresentation of minorities in professional positions continues to be a concern. Rather than specifying grade levels and type of position at this time, the Institution prefers to keep some flexibility in the program to adjust grades and provide training and other objects funding support as necessary to the particular circumstance. Those organizations that have been targeted for these permanent positions include the Cooper-Hewitt National Museum of Design, the Hirshhorn Museum and Sculpture Garden, the Smithsonian Astrophysical Observatory and the Smithsonian Institution Traveling Exhibition Service. Each of these organizations will propose a specific position(s) to remain open until qualified minority candidates surface through the normal civil service competitive process.

FY 1991 UNCONTROLLABLE INCREASES

The Smithsonian Institution seeks funds to pay costs that are beyond its control. These costs result from established practices in regulating wages, higher rental costs, and the effects of inflation and other factors. The Institution requests \$11,157,000 for the following uncontrollable costs:

Salary and Related Costs

Necessary Pay:

--Annualization of FY 1990 Legislated Pay Raise	\$ 1,375,000
--FY 1991 Legislated Pay Raise (50 percent of FY 1991 costs)	2,022,000
--Annualization of New FY 1990 Positions	1,753,000
--One Additional Workday	650,000
--Payroll Base Deficiencies	344,000

Other:

--Workers' Compensation	264,000
--Personnel Payroll System	<u>71,000</u>

Total, Salary and Related Costs \$ 6,479,000

Utilities, Communications, and Postage \$ 4,213,000

Rental Space \$ 465,000

Grand Total, Uncontrollable Increases \$ 11,157,000

SALARY AND RELATED COSTS - The Institution requests a net amount of \$6,479,000 for the projected higher salary and benefits costs in FY 1991 for FY 1990 staff. The Smithsonian has calculated the funds required to annualize the FY 1990 general pay raise in FY 1991 (\$1,375,000); 50 percent of the funding required in FY 1991 for the FY 1991 legislated pay raise (\$2,022,000); and the annualization of new FY 1990 positions (50 workyears and \$1,753,000). In FY 1991 the Institution also requires funds to cover salary and benefit costs attributable to one additional paid day (\$650,000), payroll base deficiencies within several Smithsonian offices (\$344,000), increased workers' compensation costs (\$264,000), and increased operating costs for the Personnel Payroll System (\$71,000).

Annualization of FY 1990 Legislated Pay Raise - The Smithsonian has included an amount of \$1,375,000 in its FY 1991 estimates to annualize the 3.6 percent January 1990 pay raise. In accordance with the pay plan established by the President under Section 5305 of Title 5, United States Code, annual salaries for Smithsonian General Schedule, Merit Pay, and Executive level employees increased on January 1, 1990. Prevailing practices required a Wage Funding authority to review Wage pay scales in each geographic area. The pay plan also provides that Wage Board employees receive the same pay increase as General Schedule employees. The Institution will absorb the partial-year cost of this pay raise in FY 1990.

FY 1991 Legislated Pay Raise - The FY 1991 request assumes a 3.5 percent pay raise, effective January 1991, for civilian, military, and executive level employees. The Smithsonian seeks \$2,022,000 to fund 50 percent of the partial-year costs of this anticipated FY 1991 legislated pay raise in FY 1991. This request for partial funding of the 1991 pay raise cost estimate for 3/4 of the year is in compliance with specific guidance from the Office of Management and Budget.

Annualization of New FY 1990 Positions - The Institution requires an amount of 50 workyears and \$1,753,000 to annualize the partial-year funding provided for the new positions approved in FY 1990. This amount represents the restoration of the funding reduced by Congress in applying a 25 percent salary lapse rate to new FY 1990 positions.

Additional Workday - Currently, base funding is available for employee compensation for a 260-day workyear. FY 1991, however, contains 261 workdays and requires additional funding to cover employee salary and benefit costs for the extra day. The Institution requests \$650,000 to cover this uncontrollable cost.

Payroll Base Deficiencies - The Institution requests \$344,000 to address payroll related base deficiencies in several of its smaller offices--most of which are in the Public Service area. These offices have experienced a gradual erosion of base funding as a result of low turnover, staff promotions, pay increases, and/or the occasional need to fill vacancies at higher grades to attract the best available candidates. Offices with small operating budgets have little flexibility to reprogram resources and, for obvious reasons, are particularly vulnerable to this type of base erosion. The requested funding will restore the respective budgets to a current services level. The Institution has provided a line-item by line-item breakdown of this request, along with the other components of Necessary Pay in a table at the end of the Uncontrollable Increases section.

Workers' Compensation - The Smithsonian requires a total of \$1,133,000 to meet the provisions of Section 8147(b) of Title 5, United States Code, as amended on April 21, 1976, by Public Law 94-273. This law provides for payments to be made to employees for injuries and to their families in cases where work accidents result in employee death. These payments are determined and made by the U.S. Department of Labor's Employment Standards Administration, which subsequently bills agencies for costs incurred for their employees. While the number of visitor injuries has declined, the number of on-the-job injuries experienced by Smithsonian staff has increased. A major portion of the rise in injuries may be the product of increased reporting. This situation results in additional costs because of the necessary medical treatment and non-productive time resulting from the injuries. The Institution continues to strengthen its Accident Safety Program administered by the Office of Environmental Management and Safety (OEMS). This Program includes management training to better understand the workers' compensation program, employee training in safe working environments, and supports a staff whose duties include identifying and eliminating potential accident hazards. OEMS has implemented a new automated management information system for accident data which will facilitate the analysis of injury and accident data in an effort to identify target areas requiring additional action. The FY 1991 bill for the Institution's Federal portion, \$1,133,000, covers the actual expenses incurred for the period July 1, 1988, through June 30, 1989. With the amount of \$869,000 in its base for workers' compensation, the Institution requires an additional \$264,000.

Personnel Payroll System - The Institution uses the computer services of the U.S. Department of Agriculture's National Finance Center (NFC) to support personnel management and payroll production. With base Federal funds of \$522,000, the Smithsonian requires an increase of \$71,000 for the Federal share of processing the payroll and personnel data and related communication services for current staff and anticipated new positions.

UTILITIES, COMMUNICATIONS, AND POSTAGE - An FY 1990 Federal base of \$15,844,000 and anticipated reimbursements of \$600,000 (\$16,444,000) is available to fund the costs of electricity, steam, gas, fuel oil, water, communications, and postage for nearly all Institution facilities. The Smithsonian needs an increase of \$4,213,000 in FY 1991 to cover anticipated costs.

The Smithsonian's projections of future utilities costs consider a variety of factors. These include:

- comparative data on actual energy consumption in previous years for each facility;
- adjustments for normal weather conditions for this geographic region based on information provided by the National Weather Service;
- actual and projected rates charged by utility companies;
- actual and projected reimbursements for utility costs from concessions, museum shops, and the Friends of the National Zoo;
- modifications to work and public spaces within facilities;
- continued energy conservation efforts in all Smithsonian buildings;
- improvements installed to heating, ventilating, and air conditioning systems and components throughout the physical plant;
- the design of new facilities;
- projected increases in consumption caused by expanded use of computers and other equipment throughout the Institution.

The following table shows the costs and base funds available to cover the components of the Utilities account from FY 1989 to FY 1991.

ANALYSIS OF UTILITIES AND COMMUNICATIONS COSTS
FY 1989 - FY 1991

	<u>FY 1989</u>	<u>FY 1990</u>	<u>FY 1991</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>
<u>ELECTRICITY</u>			
<u>Use</u> - Millions of KWH	112.2	115.0	116.4
<u>Unit Cost</u> - Average per KWH	.059	.060	.061
<u>Cost</u> - \$000's	\$6,620	\$6,900	\$7,100
FY 1991 Estimated Cost			\$7,100
FY 1990 Base			<u>\$6,633/1</u>
Base Shortage, Electricity			\$ 467

<u>STEAM</u>			
<u>Use</u> - Millions of Pounds	223.5	225.8	225.8
<u>Unit Cost</u> - Avg. per 1,000 lbs.	15.50	15.50	15.50
<u>Cost</u> - \$000's	\$3,464	\$3,500	\$3,500
FY 1991 Estimated Cost			\$3,500
FY 1990 Base			<u>\$3,239</u>
Base Shortage, Steam			\$ 261
<u>GAS</u>			
<u>Use</u> - Millions of Cubic Feet	1.193	1.275	1.275
<u>Unit Cost</u> - Avg. per Cubic Ft.	.7058	.7058	.7058
<u>Cost</u> - \$000's	\$ 842	\$ 900	\$ 900
FY 1991 Estimated Cost			\$ 900
FY 1990 Base			<u>\$ 800</u>
Base Shortage, Gas			\$ 100
<u>FUEL OIL/WATER</u>			
<u>Cost</u> - \$000's	\$ 235	\$ 250	\$ 250
FY 1991 Estimated Cost			\$ 250
FY 1990 Base			<u>\$ 150</u>
Base Shortage, Fuel Oil/Water			\$ 100
<u>D.C. GOVT. WATER/SEWER</u>			
<u>Cost</u> - \$000's	\$ 0	\$2,742	\$2,742
FY 1991 Estimated Cost			\$2,742
FY 1990 Base			<u>\$ 0</u>
Base Shortage, D.C. Water/Sewer			\$2,742
<u>COMMUNICATIONS</u>			
<u>Cost</u> - \$000's	\$3,800	\$3,900	\$4,065
FY 1991 Estimated Cost			\$4,065
FY 1990 Base			<u>\$3,900</u>
Base Shortage, Communications			\$ 165
<u>POSTAGE</u>			
<u>Cost</u> - \$000's	\$2,000	\$2,050	\$2,100
FY 1991 Estimated Cost			\$2,100
FY 1990 Base			<u>\$1,722</u>
Base Shortage, Postage			\$ 378
<u>TOTALS</u>			
	FY 1991 Estimated Cost		\$20,657
	FY 1990 Base		<u>\$16,444/1</u>
	FY 1991 Requested Increase		\$ 4,213

1/ Reflects FY 1990 Federal base plus anticipated reimbursements in FY 1991 of \$600,000.

Electricity - The major component of the Utilities account is electricity. The FY 1991 estimate reflects an increase in overall consumption associated with full occupancy of pods at the Museum Support Center (MSC), new facilities at the Smithsonian Astrophysical Observatory (SAO) expected to be occupied and in full operation, and general increases associated with major automation efforts under way in all Smithsonian facilities. The consumption increase also reflects higher than previously planned use of electricity at the new restaurant in the National Air and Space Museum (NASM), although the increased cost is offset by a reimbursement received from the operator of the restaurant. The FY 1991 rate estimate includes a small average rate increase to cover the 4.32 percent rate increase approved by the Maryland Public Service Commission in June 1988 for electrical service furnished to customers. As a result of this rate increase and the anticipated consumption increase, an additional \$467,000 is necessary to cover estimated electricity costs in FY 1991.

Steam - The FY 1991 estimate reflects an estimated increase in steam consumption over current levels associated with a return to more normal winter weather patterns. As a result of this consumption increase, an additional \$261,000 is necessary to cover estimated steam costs for FY 1991.

Gas - The FY 1991 estimate reflects a slight consumption increase over the current level associated with the full occupancy of the pods at the MSC. As a result of this consumption increase, an additional \$100,000 is necessary to cover estimated gas costs for FY 1991.

Fuel Oil/Water - The FY 1991 estimate reflects a 12 percent rate increase in the cost of water and sewer provided by the Washington Suburban Sanitary Commission that became effective on July 1, 1988. In addition, water and sewer consumption at MSC has increased significantly as this facility continues to move toward full operation. As a result of both the consumption and rate increases, an additional \$100,000 is necessary to cover estimated fuel oil and water costs for FY 1991.

D.C. Government, Water/Sewer - The District of Columbia Government has indicated that the Institution must reimburse it for \$2,742,000 in service charges for D.C. water/sewer in FY 1990. The Institution must absorb the FY 1990 charges. As no rate increases are anticipated, the Institution requests \$2,742,000 for FY 1991.

Communications - The Institution continues its efforts to limit communications costs through increased monitoring and review of long distance calls, limiting access to long distance lines to reduce the potential for abuse, and increased monitoring of telephone charges to reduce billing errors. Despite these measures, telephone costs continue to rise. Additional expenses associated with the use of FTS 2000 are anticipated due to higher rates for off-net usage of this new system. A Panama to Washington communications data link, expected to be fully operational by FY 1991, will also generate additional costs. Finally, additional costs for installations and monthly service associated with new facilities at the Smithsonian Tropical Research Institute (STRI) and SAO are also predicted. An additional \$165,000 is necessary to cover estimated communications costs in FY 1991.

Postage - Ongoing efforts to control postage costs have resulted in reducing the cost of postage services to the Institution. Postage costs for domestic mailings remain rather constant as a result of eliminating first-class package service and placing tighter controls on the use of express mail service. Management has instituted an internal review of mailing practices at locations off the Mall to ensure

that established policies and objectives are consistently followed. However, despite these steps and controls, postage costs continue to increase, primarily as a result of increased volume associated with program activities and responses to public information requests. The Smithsonian request for FY 1990 was reduced by \$328,000 as directed by OMB due to proposed legislation that would create a separate class for government mail. To date, this legislation has not been introduced. The additional \$378,000 requested for FY 1991 restores this reduction and provides additional funds to cover the costs of an anticipated increase in mailing volume.

Energy Conservation - The Institution continues to monitor and limit all forms of energy consumption. An automated energy management system reduces peak energy demand by selectively shutting down equipment when necessary. This system, when fully installed, will monitor equipment in all buildings for fluctuations or malfunctions and alert staff to inspect for problems. Ongoing efforts also include:

- continuing the phased program of performing comprehensive building energy audits;
- renovating heating, ventilating, air conditioning, plumbing, and electrical systems;
- reducing lighting levels in work and nonpublic areas;
- installing more efficient lighting fixtures;
- operating heating and air conditioning systems at the minimum level necessary to prevent damage to the collections;
- curtailing electrical consumption during nonpublic hours;
- increasing attention to energy conservation when determining space use, modifying space, and designing new facilities.

Through the use of the Facilities Management computer system, the Smithsonian will eventually gain closer control over building lighting systems. This system conserves electricity by turning lights on and off as use fluctuates. Automated lighting controls are now in place at the Natural History Building, the Air and Space Building, the Quadrangle Complex, and the American History Building. The Smithsonian plans to install such a system for the American Art and Portrait Gallery Building in FY 1990/FY 1991 and in later years in other major buildings.

RENTAL SPACE - For FY 1991, the Institution's central rental account requires \$265,000 for uncontrollable expenses. The FY 1991 base includes redirection to the rental account of \$138,000 (\$140,000 pre-GRH) approved in FY 1990 for space renovations. This account provides for the Federal portion of the rental expenses for program and administrative activities located at L'Enfant Plaza, the Smithsonian Institution Service Center at 1111 North Capitol Street, the research bureaus of the Archives of American Art in New York City and Boston, Massachusetts, and storage space at the Fullerton Industrial Park in Springfield, Virginia. The amounts below reflect projected costs for rental space at these sites:

FEDERAL RENTAL PROGRAM ADMINISTERED BY THE OFFICE OF PLANT SERVICES
FY 1989 - FY 1991

(\$000's)

	<u>FY 1989</u>		<u>FY 1990</u>		<u>FY 1991</u>	
	<u>Actual Cost</u>		<u>Estimated Cost</u>		<u>Estimated Cost</u>	
	<u>Federal</u>	<u>Trust</u>	<u>Federal</u>	<u>Trust</u>	<u>Federal</u>	<u>Trust</u>
L'Enfant Plaza	\$1,074	\$1,163	\$1,416	\$1,240	\$1,648	\$1,374
North Capitol Street	989	115	1,090	130	1,150	138
Archives of American Art:						
- New York	135	--	160	--	170	--
- Boston	10	--	15	--	20	--
Fullerton	<u>32</u>	<u>--</u>	<u>298</u>	<u>--</u>	<u>309</u>	<u>--</u>
Total Costs	\$2,240	\$1,278	\$2,979	\$1,370	\$3,297	\$1,512
Base	<u>\$2,034</u>	<u>\$1,278</u>	<u>\$2,894</u>	<u>\$1,370</u>	<u>\$3,032</u>	<u>\$1,512</u>
Surplus/(Deficit)	\$ (206)	\$ --	\$ (85)	\$ --	\$ (265)	\$ --

The FY 1991 estimate for Federal rental costs for L'Enfant Plaza reflects annual cost increases specified in the lease agreement and takes into account the offsetting Trust fund contribution for shared administrative activities and office space occupied by the specific auxiliary activities on the Mall.

The projected rental expense for space at 1111 North Capitol Street includes the annual cost increase specified in the current lease, with the allocation policy on administrative and programmatic space also governing the Federal/Trust apportionment of costs for this location.

The projected rental expense for the Archives of American Art represents funding requirements for the spaces occupied in New York and Boston.

Finally, the projected rental expense for Fullerton reflects the continuing cost of storage space approved for the Smithsonian Institution Archives in FY 1989 and the National Museum of American History in FY 1990.

For FY 1991, the projected Federal share of the central rental account is \$3,297,000. The Institution's Federal base is \$3,032,000 in FY 1990. Therefore, the Smithsonian requires an additional amount of \$265,000 to defray space rental costs at these locations in FY 1991.

Smithsonian Astrophysical Observatory Rent (\$200,000) - The Institution's request for an increase of \$200,000 will meet projected increased costs of rent for SAO's operations at Cambridge.

60 Garden Street Property (\$80,000) - SAO leases approximately 90,000 square feet of space from the Harvard College Observatory. Rental is negotiated annually and is dependent on the actual costs of operating and maintaining the buildings during the previous year. Thus, for FY 1991, the Federal portion of the total estimated increase in cost of deferred maintenance and operating expenses is \$80,000 per year.

160 Concord Avenue Property (\$78,000) - SAO's five-year lease at 160 Concord Avenue expires in November 1990. SAO intends to renew the lease for the next five-year period. Based on current market conditions in Cambridge, SAO estimates the Federal portion of this increased cost at \$78,000 per year.

Other Space (\$42,000) - Mostly because of SAO's success in winning four major competitions for NASA-sponsored projects--ranging from submillimeter astronomy to high-energy astrophysics--SAO will require additional space in Cambridge. SAO apportions its rent between Federal and Trust funds in relation to the total cost of rent and the total space occupied. In order to satisfy space requirements, SAO will rent an additional 15,000 square feet. Because the unit cost of this rental is expected to be substantially higher than the average rental SAO is now paying, the Federal part of SAO's rent will perforce increase. This increase is estimated at \$42,000 per year.

SMITHSONIAN INSTITUTION
FY 1991
NECESSARY PAY REQUIREMENTS

(Dollars in Thousands)

	Annualization of New FY 1990 Positions FTE	\$	Annualization of FY 1990 Pay Raise	FY 1991 Pay Raise (50% 3/4 FY)	Additional Workday	Payroll Base Deficiency	Total Necessary Pay
	-----	-----	-----	-----	-----	-----	-----
Assistant Secretary for Research		0	10	16	4	0	30
Astrophysical Observatory	0.75	31	58	86	28	0	203
Tropical Research Institute	8.75	243	33	49	16	0	341
Environmental Research Center	0.50	15	12	17	5	0	49
National Zoological Park	2.50	73	109	161	52	0	395
Smithsonian Institution Archives		0	4	7	2	0	13
Smithsonian Institution Libraries	1.00	21	29	42	16	0	108
Internat'l Environmental Science Prog.		0	3	4	1	0	8
Major Scientific Instrumentation		0	0	0	0	0	0
Assistant Secretary for Museums	1.00	64	8	11	4	46	133
National Museum of Natural History	0.75	21	198	291	95	0	605
National Air and Space Museum	0.50	23	73	109	35	0	240
National Museum of American History	0.50	14	117	173	55	0	359
National Museum of the American Indian	25.00	968	28	42	13	0	1,051
National Museum of American Art		0	37	55	18	0	110
National Portrait Gallery		0	28	41	13	0	82
Hirshhorn Museum and Sculpture Garden		0	24	35	11	0	70
Sackler Gallery/Freer Gallery of Art		0	23	34	11	0	68
Archives of American Art		0	8	11	4	0	23
Cooper-Hewitt Museum		0	9	13	4	0	26
National Museum of African Art		0	17	26	8	0	51
Anacostia Museum		0	12	17	6	0	35
Conservation Analytical Laboratory		0	16	24	8	0	48
Office Exhibits Central		0	12	17	5	0	34
Traveling Exhibition Service	1.25	51	5	8	2	0	66
Museum Support Center		0	9	13	4	0	26
Assistant Secretary for Public Service	0.25	5	12	17	4	100	138
Smithsonian Institution Press		0	9	13	4	56	82
Office of Folklife Programs	0.25	5	2	3	1	0	11
Academic and Educational Programs		0	5	6	2	0	13
International Activities	0.25	9	4	6	2	0	21
Administration	3.50	100	132	191	60	142	625
Office of Design & Construction	0.75	30	19	28	9	0	86
Office of Protection Services	2.50	80	171	252	81	0	584
Office of Plant Services		0	139	204	67	0	410
GRAND TOTAL, SMITHSONIAN INSTITUTION	50.00	\$1,753	\$1,375	\$2,022	\$650	\$344	\$6,144
	=====	=====	=====	=====	=====	=====	=====

RESEARCH

OFFICE OF THE ASSISTANT SECRETARY FOR RESEARCH

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	22	1,663	6	418	-	2,061	-	183	-	362
FY 1990 -Estimate	36	1,586	6	662	-	2,254	-	281	-	79
-Base	36	1,617								
FY 1991 Estimate	36	1,647	6	662	-	2,252	-	281	-	24

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	36	0	36
11 Personnel Compensation.....	953	26	979
12 Personnel Benefits.....	147	4	151
21 Travel.....	49	0	49
22 Transportation of Things.....	2	0	2
23 Rent, Communications & Utilities.....	20	0	20
24 Printing & Reproduction.....	11	0	11
25 Other Services.....	389	0	389
26 Supplies & Materials.....	23	0	23
31 Equipment.....	23	0	23
Total	1,617	30	1,647

Analysis of Increase

Necessary Pay.....	30
Program Funds.....	0

ABSTRACT - The mission of the Office of Assistant Secretary for Research is to provide guidance, planning, and overall policy direction to the Smithsonian Institution's research efforts and research support activities. The Office strives to facilitate, strengthen, and plan for the future development of Smithsonian research worldwide. In addition, the Office works to develop and foster an environment conducive to the creation and dissemination of original, world-class scholarship that contributes to human knowledge and creates an appreciation and renewed respect for the relevance of ideas in modern society by the citizens of the world. Within the

Institution, the Office works to create an ambience which encourages and respects all views, to develop effective linkages between scholarship and other Institutional endeavors and to promote tolerance of differing viewpoints. Also included in this line-item are the Joseph Henry Papers, the Office of American Studies, and the Office of Fellowships and Grants.

The Joseph Henry Papers researches and publishes the manuscripts of Joseph Henry, first Secretary of the Smithsonian and a leading 19th-century American physicist. The Office of American Studies conducts a graduate program in the field of American material culture, incorporating course work at the Smithsonian. The Office of Fellowships and Grants provides central management and administrative responsibility for the Institution's programs of research grants, fellowships, and other scholarly appointments. (The latter two offices are new components in this line-item. For FY 1990 and prior years, budget information for these offices appeared in the Special Programs section.)

The Smithsonian is not seeking additional funds for FY 1991 programmatic increases for the offices included under the Office of the Assistant Secretary for Research. The Institution requires \$30,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - I. Office of the Assistant Secretary for Research: With base funding of 20 workyears and \$879,000, the Office of the Assistant Secretary for Research (OASR), in concert with the Secretary and other appropriate management staff, supervises the research activities of the Institution. OASR serves as the major Institutional liaison for research centers in the United States and abroad. The Office is responsible for enhancing the Institution's scholarly environment and productivity by initiating cyclical outside evaluations of scholarly activities; fostering regular reviews of individual scholars' performance; providing increased research opportunities through internal competitive funds; creating and coordinating central programs that support individual and group research efforts; broadening the base of funding for research through both Federal and private funds; assessing programmatic effectiveness and making recommendations for curtailment of selected activities; deepening and selectively expanding the Institution's activities in areas of high Institutional priority; and establishing joint programs, appointments, and cooperative efforts with other scholarly institutions, including the Nation's universities. This Office is also responsible for tracking external research trends and ensuring that they are appropriately coordinated with current Smithsonian activities. The Office oversees and coordinates scientific diving activities which support collection and study of underwater subjects and environments by a variety of Smithsonian research bureaus. In addition, the Office provides support for carbon dating to appropriate Smithsonian research units.

A fundamental responsibility of this Office is to develop guidelines to ensure the superior quality of research conducted at the Institution. The Office provides guidance on shifts of emphasis, suggestions for new areas of research, access to state-of-the-art facilities and equipment, and advice on selecting and promoting scholarly staff. In addition, the Office strives to improve the dissemination of Smithsonian research findings to the general public and to specialized audiences.

II. Joseph Henry Papers: With base funding of 5 workyears and \$233,000, the Joseph Henry Papers collects, transcribes, researches, edits, annotates, and publishes the manuscripts of Joseph Henry, a pioneer American physicist and the first Secretary of the Smithsonian Institution. Publication objectives are a 15-volume letterpress

series, an indexed 90,000-item microform edition, and special publications for a more general audience. The project is a source of unpublished and little-known letters and papers, collected from 30 foreign countries and 328 depositories in the United States. The documents and commentary provided by the editors give insight into the history of science, the development of Federal policy toward the sciences, the institutional and social structure of the scientific community in the 19th century, and the history of the Smithsonian Institution.

The Henry Papers staff expects the publication of the sixth volume of the series in FY 1990. This volume, covering the years 1844-46, details Henry's work at the College of New Jersey (now Princeton University). In laboratory notebooks, Henry describes his extensive experimentation in electricity and magnetism. Letters, notes, and newspaper articles trace the establishment of the Smithsonian Institution and Henry's election as the first Secretary. In FY 1990, the Henry Papers staff will complete the preliminary selection of 300 manuscripts from the 3,720 available for publication in volume 7. This volume will focus on Henry's efforts to establish the Smithsonian Institution as a center for the support of original research. Staff efforts to transcribe, research, and annotate these manuscripts will continue through FY 1991.

In addition to its publication program, the Henry Papers project is a centralized resource for Henry correspondence that includes an automated 60,000-item document index and the Alexander Graham Bell-Joseph Henry Library. Both are essential for research in the history of science and the cultural history of the United States. Students, interns, scholars, genealogists, and the general public use this material to study such subjects as the history of acoustics, electricity, magnetism, meteorology, museums, and photography.

III. The Office of American Studies: With base funding of 2 workyears and \$110,000, the Office of American Studies (OAmers) sponsors a graduate program in American material culture in cooperation with various universities located in the Washington, D.C., area and in other cities. The director of the program and cooperating scholars teach three or four seminars a year to graduate students in American studies or American history departments of affiliated universities for academic credit. Through the program, both scholars and students pursue American studies using the unique resources of experts, objects, manuscripts, and books available in various bureaus of the Smithsonian, and disseminate the knowledge acquired during course study and research performed at the Smithsonian.

IV. The Office of Fellowships and Grants: With base funding of 9 workyears and \$364,000, the Office of Fellowships and Grants (OFG) manages centralized fellowship and internship programs, all other stipend appointments, and other programs that support research. Trust funds support most of these programs. These programs facilitate communication and collaboration between the Institution and universities, museums, and research centers. They strengthen international and culturally diverse participation in Smithsonian research and related fields. In addition, the Office publishes Smithsonian Opportunities for Research and Study, an annual publication with information about the Institution's fellowships, internships, grants, and research activities.

OFG manages a variety of programs that enable students and scholars to study at the Smithsonian. In FY 1989, OFG awarded 103 predoctoral and postdoctoral fellowships through the Institution-wide program. Thirty-three of these recipients were foreign students and scholars from 20 countries. In addition, Federal and Trust funds

allotted to the bureaus for specific programs supported 27 fellowships. Under the Short-Term Visitor Program, 131 persons came to the Institution. Seventy of the participants represented 32 countries. The Regents Fellowship Program continues to bring eminent scholars to the Smithsonian. Two fellows began their residencies in FY 1989. The Office also administered internship stipend awards for 169 students in FY 1989.

Several programs provide scholarly support to Smithsonian professional staff. Under the competitive Scholarly Studies Program, 31 research proposals received grants. Some of these awards involved collaborative studies with scholars from other institutions. The Research Resources Program, established in FY 1988, supports projects to enhance use of the Smithsonian's documentary and archival collections. After review by an outside committee, OFG awarded ten grants. The workshop program provides funding for Smithsonian staff to organize seminars, symposia, and conferences. These activities bring together scholars from around the world to discuss a variety of subjects; 15 received support in FY 1989. Three Smithsonian staff members received the James E. Webb Fellowship. The fellowships allow recipients to further their specific administrative goals and promote excellence in the management of cultural and scientific not-for-profit organizations.

The Office also administers programs to increase minority participation in Smithsonian research. Thirty-three students joined ongoing research and museum studies in the Minority Internship Program. In addition, one student received an appointment under the Cooperative Education Program. One former appointee returned to complete her tour-of-duty. The Native-American Awards Program appointed 20 native-American students and scholars to work on native-American resources and activities at the Institution. Under the Faculty Fellowship Program, five minority faculty members received awards to conduct research in residence.

NONAPPROPRIATED SOURCES OF FUNDING:

I. Office of the Assistant Secretary for Research: Unrestricted General and Special Purpose Funds - Annual allotments provide these funds that support the salary, benefits, and expenses of the Assistant Secretary for Research. An allotment also supports three important international foundations that operate field research stations used by Smithsonian staff members as well as by others in the world scientific community. The Seychelles Islands Foundation operates the former Royal Society station on the Island of Aldabra, in the Indian Ocean, which supports biological research. The Charles Darwin Foundation operates a biological research station in the Galapagos Islands. The King Mahendra Trust for Nature Conservation provides scholars with access to unique environments on the Indian subcontinent by operating a field station in the terai region (a lowland plain) of Nepal, where significant ecosystem research is in progress. Smithsonian support facilitates the continued accessibility of these areas for the research community at large. Also, the Smithsonian provides support for the exchange of scholars and scientific information between the Smithsonian and other nations, principally the People's Republic of China and Cuba. A Special Purpose Fund provides support for cooperative agreements between the Smithsonian and the Nation's universities. The Research Opportunities Fund supports unanticipated general research.

Restricted Funds - These consist of restricted endowments, gifts, and grants from individuals, foundations, and corporations that specify the use of the donation or bequest. Smithsonian units receive competitive awards from the Seidell Endowment

Fund, which the OASR administers and which provides for dissemination of scientific information.

Government Grants and Contracts - The Office of Naval Research has provided contract funds for the continuation of studies in the area of manpower research and development.

II. Joseph Henry Papers: Unrestricted General and Special Purpose Funds - Funds are available from the Smithsonian's Research Opportunities Fund to support research projects.

Restricted Funds - Support in FY 1989 and FY 1990 from the National Academy of Sciences pays for incidental programmatic items not otherwise funded, including stationery, journal subscriptions, and additions to Henry Papers research collections. The Smith College Tuition Fund defrays travel and auxiliary support costs for staff, interns, and volunteers.

III. Office of American Studies: Unrestricted General and Special Purpose Funds - OAmers receives tuition reimbursement from cooperating universities, principally George Washington University and the University of Maryland, whose graduate students take courses offered by the Office of American Studies. The tuition reimbursement refunds the Smithsonian Institution for the use of its facilities by the students participating in Smithsonian classes and, in addition, provides honoraria and reimbursement for the services of outside experts participating in the program.

IV. Office of Fellowships and Grants: Unrestricted General and Special Purpose Funds - These funds are primarily for the Institution-wide fellowship programs. Shorter visits by scholars and students also receive support. A program allotment supports a part of the administrative expenses of the Office of Fellowships and Grants. The Regents Fellowship Program continues to bring distinguished visiting scholars to the Institution.

In addition, special purpose funds provide for minority internships and faculty fellowships, minority students pursuing graduate degrees under the Education Fellowship Program, and the Native-American Awards Program. The Scholarly Studies Program encourages research by Smithsonian staff in the sciences, arts, and humanities.

Restricted Funds - These funds consist of restricted endowments, gifts, and grants from individuals and foundations for a particular project. They include an endowment from the Walter Rathbone Bacon Scholarship for research on fauna outside the United States, and the James E. Webb Fellowship to promote excellence in the management of cultural and scientific organizations.

SMITHSONIAN ASTROPHYSICAL OBSERVATORY

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	104	10,750	50	3,705	35	2,311	-	216	111	16,742
FY 1990 -Estimate	110	10,991	50	3,900	35	2,000	-	100	119	19,000
-Base	110	11,167								
FY 1991 Estimate	125	12,532	50	4,000	35	2,000	-	100	121	20,000

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	110	15	125
11 Personnel Compensation.....	5,916	882	6,798
12 Personnel Benefits.....	1,004	243	1,247
21 Travel.....	90	0	90
22 Transportation of Things.....	50	0	50
23 Rent, Communications & Utilities.....	625	240	865
24 Printing & Reproduction.....	120	0	120
25 Other Services.....	2,334	0	2,334
26 Supplies & Materials.....	175	0	175
31 Equipment.....	853	0	853
Total	11,167	1,365	12,532

Analysis of Increase

Necessary Pay.....	203
Program Funds.....	962
Rent.....	200

ABSTRACT - 1990 marks the 100th anniversary of the Smithsonian Astrophysical Observatory (SAO), a bureau of the Smithsonian Institution devoted to basic research in astronomy, astrophysics, and space science. For a century, SAO has pioneered studies of physical processes that determine the nature of the universe. Today, its varied scientific programs are coordinated with the Harvard College Observatory and, together, the two observatories form the Center for Astrophysics in Cambridge, Massachusetts. In addition, SAO operates the Oak Ridge Observatory in Massachusetts.

and the Fred Lawrence Whipple Observatory in Arizona, the latter the site of the Multiple Mirror Telescope, a joint project with the University of Arizona.

Laboratory experiments, ground-based telescopes, and instruments aboard rockets, balloons, and space satellites provide scientific data. The Observatory's computers assist in the analysis of these data, with results and scientific interpretations published in scientific journals and reports. SAO also disseminates information to a wide audience through lectures, books, and the popular media.

For FY 1991, the Institution requests no-year funding in the Major Scientific Instrumentation line-item for the nonpersonnel support to complete the design and begin the construction of the submillimeter telescope array and to continue the conversion of the Multiple Mirror Telescope to an instrument with a single mirror, 6.5 meters in diameter. In addition, the FY 1991 request for SAO reflects an increase of 12 workyears and \$782,000 for personnel costs and rent associated with the submillimeter telescope array. Since this increase is related to the Major Scientific Instrumentation request, the justification for these positions appears in the Major Scientific Instrumentation section of this budget.

For FY 1991, SAO also requests an increase of 2 workyears and \$180,000 for atmospheric chemistry studies. The Institution requires \$203,000 for Necessary Pay for existing staff in this line-item. Also, the justification for an increase in rent costs totaling \$200,000 appears in the Uncontrollable section of this budget.

PROGRAM - The Institution's third secretary, Samuel Pierpont Langley, founded the Smithsonian Astrophysical Observatory in 1890. The Observatory is now recognized as one of the world's premier centers for astrophysical research. From Langley's turn-of-the-century studies of solar-terrestrial relationships through the establishment of the first worldwide satellite tracking network at the dawn of the space age and on to the present, SAO has consistently advanced the frontiers of knowledge in techniques and fields as diverse as telescope design, optical and radio interferometry, x-ray astronomy, and cosmology. Since 1956 and its move to Cambridge, Massachusetts, SAO has worked closely with the Harvard College Observatory (HCO). Indeed, the partnership of the two observatories in the Center for Astrophysics (CfA) has fostered a broad interdisciplinary approach to research that combines observations across the entire electromagnetic spectrum with theoretical studies and laboratory experiments to provide a deeper understanding of the basic physical processes shaping the cosmos.

Research programs are organized in seven divisions, with efforts coordinated so as to complement each other: atomic and molecular physics, high-energy astrophysics, optical and infrared astronomy, planetary sciences, radio and geoastronomy, solar and stellar physics, and theoretical astrophysics. Data-gathering facilities include telescopes at the Fred Lawrence Whipple Observatory in Arizona and the Oak Ridge Observatory in Massachusetts. In addition, SAO scientists have access to data provided by instruments aboard rockets, balloons, and space satellites, as well as by laboratory experiments conducted in Cambridge. In support of this research, SAO maintains engineering and publications departments, a computation facility, an image-processing laboratory, and an extensive astronomical library. Because of its location outside of the Washington metropolitan area, SAO has its own administrative structure funded by both Federal funds and indirect charges to contracts and grants.

On behalf of the International Astronomical Union, SAO operates two global science information services: the Central Bureau for Astronomical Telegrams and the

Minor Planet Center. The first is responsible for receiving, verifying, recording, and disseminating information about transient astronomical phenomena such as comets and supernovae. The second center computes orbits and provides observational information on asteroids as well as serving as the official arbiter of minor planet nomenclature.

With support from the National Aeronautics and Space Administration, SAO serves as the United States gateway for SIMBAD (Set of Identifications, Measurements and Bibliography for Astronomical Data), an international astronomical data base maintained at Strasbourg, France. Through direct computer links, SAO provides American astronomers with access to this system which contains information on almost all known astronomical objects, including all published references since 1950.

The results of SAO research are published in established scientific journals, as well as in the Cfa Preprint Series, SAO Special Reports, and other technical bulletins and papers distributed to scientific and educational institutions worldwide. Lectures, books, and the popular media disseminate information intended for wider, more general audiences. An extensive program of public information and education includes monthly "Observatory Nights" in Cambridge and regularly scheduled tours of the Arizona facility. HCO and SAO also conduct an innovative program to develop secondary school curriculum materials that use examples from astronomy to teach basic principles of physics and mathematics.

Among the significant scientific accomplishments of the past year were these highlights:

-- Gamma rays: Throughout the 1970s, a relatively strong signal of high-energy gamma rays was observed coming from the direction of the center of the Milky Way. These emissions were the result of collisions between electrons and positrons (the antimatter equivalent of electrons) that destroy each other to produce gamma rays in the cosmic version of a super-collider. The association of gamma rays with the galactic center suggested the presence of a massive black hole. However, in the early 1980s, the gamma-ray signals inexplicably disappeared and just recently--and just as mysteriously--reappeared. This year, an SAO scientist and a colleague at Bell Laboratories found that changes in an x-ray source known as GX1+4 located near the galactic center appears to mimic exactly the fluctuating gamma rays. Indeed, this suggests that GX1+4, a well-known binary system with a red giant star in orbit about a neutron star, could be the source of the mysterious on-again-off-again gamma rays. Observations by the Gamma Ray Observatory, now scheduled for launch by NASA in 1990, could pinpoint the source precisely and settle the question of where these mysterious gamma rays originate.

-- Moon rocks: Nearly two decades after the Apollo astronauts returned samples of lunar soil, an SAO scientist has identified a completely new rock type on the Moon. Tiny grains of a magnesium-rich mineral called cordierite, usually present only in very deep geological deposits, were found in a collection made by the Apollo 15 mission. The appearance of this rare mineral on the lunar surface suggests it was "excavated" by a massive meteorite impact, perhaps the same one that created the Moon's huge Imbrium Basin near where the sample was collected.

-- Silicon carbide: The close collaboration between radio astronomers and laboratory spectroscopists at SAO resulted this year in the discovery of a new molecule, silicon carbide (SiC), in the gaseous envelope around an evolved star. This free radical--a diatomic metal carbide--had long defied detection both on Earth and in

space. However, the tantalizing suggestion of the molecule's distinctive lines seen in the spectra of a star by European astronomers led to its confirmation in SAO's laboratory.

-- Supernova: Although considerably faded since its discovery in February 1987, the supernova in the Large Magellanic Cloud continues to be an object of great interest to SAO scientists. One team using optical speckle interferometry to obtain unusually high resolution images of Supernova 1987A detected a slight displacement in the supernova's center of brightness with respect to the pre-explosion position of its suspected progenitor star Sanduleak-69 202. The finding suggests this star actually may have been part of a binary system and that one component survived the explosion. The presence of a second relatively bright star nearby could account for the "flattening" of the supernova's light curve, a possible reason why Supernova 1987A has not shown the expected steady, continuing decline in luminosity.

-- Satellite: The National Aeronautics and Space Administration has selected SAO to build and operate the Submillimeter Wave Astronomy Satellite (SWAS). This satellite will be used to study how molecular clouds in the Milky Way collapse to form stars and planets. Scheduled for launch by a Scout rocket in 1994, SWAS is part of NASA's recently revitalized Small Explorer Program, a series of small, relatively inexpensive scientific spacecraft that can be quickly developed and deployed by expendable rockets. The SAO experiment is one of only four selected from some 50 proposed in a nationwide peer-reviewed competition, and the only one to focus on phenomena outside the solar system. SWAS will complement very well the much higher angular-resolution measurements to be made with SAO's ground-based submillimeter telescope array.

A brief summary of the research conducted in each of SAO's seven divisions follows. In each section, the first paragraph describes the research in general terms, and the subsequent paragraphs describe recent accomplishments, in addition to those highlighted above. Following these descriptions of research activities, SAO's other programs of equipment and facilities development are discussed.

Atomic and Molecular Physics - Through a combination of theoretical studies and laboratory experiments, SAO scientists in this division explore the fundamental atomic and molecular processes occurring in a wide variety of astrophysical environments--from the interiors of stars through the dusty cores of interstellar clouds to the upper reaches of the Earth's atmosphere. These complex processes include the absorption and emission of light by atoms and molecules, molecule formation and destruction, and ionization, in which a positively charged atom or molecule is created and a free electron is simultaneously released.

One of the most remarkable discoveries associated with Supernova 1987A was the detection of emission from the molecule carbon monoxide. How this molecule could have been formed--or survived--in the hostile environment of intense radiation and extreme heat associated with the stellar explosion poses some significant challenges to current theory. Division scientists have developed new models that describe conditions in the supernova's expanding shell of gas and dust and offer some specific mechanisms for molecule formation.

Growing concern over depletion of the Earth's ozone layer and the prospect of global warming have turned a long-standing divisional interest in atomic and molecular processes of the atmosphere into a subject of some immediate urgency. In collaboration with colleagues in the Optical and Infrared Division, the spectra of

several stratospheric molecules were obtained by a balloon-borne infrared spectrometer flown from Palestine, Texas, in May 1989. As part of the effort to determine what processes may preserve or destroy Earth's protective shield of atmosphere, SAO scientists analyze how the abundance of molecules such as ozone, carbon dioxide, hydrogen peroxide, and hydroxyl vary with both time and altitude. This experiment represented the first infrared observations of several of these atmospheric constituents.

Since November 1988, the National Science Foundation has funded an Institute for Theoretical Atomic and Molecular Physics at SAO and Harvard University. By attracting and training graduate students of the highest quality, the Institute hopes to address a critical national shortage of theorists in this field. In support of the effort, the Institute also brings senior researchers to SAO for discussions and collaborations with the students and other staff members. In its first year, the Institute hosted some 30 visiting scientists for stays varying from several weeks to several months.

High-Energy Astrophysics - High-energy astrophysics is concerned with some of the most exotic objects and most energetic processes in the universe. Research in this division is directed toward understanding the mechanisms that generate x-ray radiation from objects such as neutron stars, quasars, and pulsars; studying the formation, evolution, and ultimate fate of stars and galaxies; and measuring the overall distribution of matter in the universe. Because x-rays are absorbed by the Earth's atmosphere, all observations must be made from balloons, rockets, or space platforms. SAO scientists are currently analyzing x-ray data from several past space missions and are preparing instrumentation intended for future flights.

In one such development, SAO has been working with NASA and industry on the Advanced X-ray Astrophysics Facility (AXAF), a major space observatory planned for launch sometime late this decade. During the past year, polishing and assembly were completed for a mirror system comparable to that planned for AXAF. Testing with NASA's special x-ray calibration facility showed the mirror's figure and surface finish met predicted performance specifications, and its ability to focus reflected x-rays was some 20 times better than the mirrors on the highly productive HEAO-2 (Einstein) Satellite designed by SAO scientists in the 1970s. The success of this preliminary experiment will allow the research team to proceed to the AXAF mirror fabrication with some confidence.

In March 1989, a massive flare on the surface of the Sun, the third largest on record, created a geomagnetic storm on Earth that disrupted radio communications, blew out power in Canada, and produced auroral displays seen as far south as the Gulf of Mexico. By lucky chance, a rocket-borne x-ray telescope using a new multi-layer mirror was launched from New Mexico in time to observe this gigantic solar eruption. This SAO-designed instrument obtained high resolution x-ray images of the flare's onset phase, which, when combined with simultaneous observations in other wavelengths, have provided new insights into the physical processes powering these events. The data suggest that flares may be triggered by some catastrophic instability in an arcade of magnetic loops extending into the Sun's outer atmosphere, or corona. The flare energy seems to be channeled along magnetic field lines from the x-ray flaring region out to optically bright areas in the solar chromosphere, which lies between the Sun's surface and its corona.

Approximately ten years ago, the x-ray source known as 4U2129+47 was linked with a highly variable star that dimmed and brightened every 5.2 hours. Scientists thought that this source consisted of two stars, bound in a binary system, in which one was a

neutron star and the other a visible star whose optical variability was due to the changing orientation with respect to Earth of that "face" of the visible star that was heated by x-rays radiating from the neutron star. Moreover, the x-ray-emitting neutron star was probably blocked by a disk of accreting material so any x-rays reached Earth only after scattering from this disk in an x-ray halo. Observations of 4U2129+47 during a period of x-ray quiescence by SAO scientists and colleagues produced new information indicating that this is really a triple star system. Indeed, the observations provide the first convincing evidence for such a system among the special class of objects known as low-mass, x-ray binaries. Further study should reveal additional information about the three components, including their masses, relative separations, and orbital motions, and by inference, more about the origin and evolution of triple systems.

Optical and Infrared Astronomy - Optical and infrared astronomy research at SAO ranges from studies of the large-scale structure of the universe to the formation and evolution of stars. The many areas of interest include the kinematics of the halo of our galaxy, active galactic nuclei, gravitational lenses, supernovae, the chemistry of the Earth's atmosphere, and the dynamics of globular clusters and galaxies. In support of this research, SAO operates the Fred Lawrence Whipple Observatory in Arizona, site of the Multiple Mirror Telescope, the world's third largest optical telescope, jointly run with the University of Arizona. Other optical telescopes at the Whipple Observatory are used for large-scale surveys and observations; and a 10-meter-diameter light collector, the most sensitive of its type, is used for ground-based searches for high-energy gamma rays. In collaboration with Harvard, SAO also operates the Oak Ridge Observatory in Massachusetts, where a variety of instruments for research are involved with problems ranging from detection of earthquakes through asteroid orbital determinations to the search for extraterrestrial intelligence.

The Center for Astrophysics Redshift Survey, an ambitious project to map the three-dimensional distribution of some 15,000 galaxies in the northern sky, is now approximately two-thirds complete and has revealed the galaxies to be spread across giant "sheets" surrounding vast voids. During the mapping this year, evidence was found for one structure more than 400 million light years across. The existence of such an extraordinarily large structure poses serious questions about current theories concerning the origin and evolution of the universe.

While making extremely accurate measurements of the radial velocities of bright stars to detect periodic motion, SAO scientists discovered several low-mass companion objects. These otherwise invisible objects could be the elusive "brown dwarf stars" thought by some theorists to make up much of the mass of our galaxy.

Scientists in this division are actively developing new instrumentation for both ground-based and space optical and infrared astronomy. In addition to the experiment selected for flight aboard a Small Explorer Satellite, other instruments include two-dimensional-array electronic detectors, optical-fiber-fed spectrographs, and a prototype two-element optical and infrared interferometer with a baseline approximately 50 meters long to be erected at the Whipple Observatory. This prototype is being constructed in collaboration with four other institutions.

Planetary Sciences - Research in planetary sciences at SAO strives to understand the planets, satellites, and other small bodies of the solar system, as well as the processes that created them out of a great, whirling, primordial cloud of gas and dust billions of years ago.

For example, in an attempt to duplicate the physical processes present in that early solar nebula, laboratory studies were made on the evaporation of elemental constituents in meteorites. One such experiment made the first measurements of the fractionation of the elements into different isotopes.

Among the more interesting events reported by the Central Telegram Bureau and the Minor Planet Center were the discoveries made by a space-borne coronagraph of six comets in the vicinity of the Sun. A new study by an SAO scientist of the two dozen or so known "sun-grazing" comets, including some thought to have crashed into the solar surface, showed that all could have originated from the breakup of a single, large, progenitor comet in the fourth century B.C.

Adding new insight on the dynamics of the early solar system, a study of the stability of asteroids orbiting between Jupiter and Saturn showed that none could persist there for longer than some 20 or 30 million years.

Special chlorine- and potassium-solution detectors deep inside the Homestake Mine in South Dakota obtained data that will help better determine the cosmic-ray background for the solar neutrino flux, a measurement particularly crucial in this period of increasing solar activity.

Radio and Geoastronomy - Research in radio astronomy attempts to understand the structure, evolution, energy sources, and ultimate fate of those astronomical objects throughout the universe that emit radio waves. As pioneers in very long baseline interferometry (VLBI), SAO scientists use this radio observing technique to measure drifts among the continents, to probe the interior of the Earth, and to determine the distances to cosmic sources and study their structures.

A major effort has been to measure the size of our own galaxy and the distances to neighboring galaxies. By charting the relative motions of water-vapor masers surrounding a newly formed massive star, SAO scientists can determine with high precision the distance to that star. Over the past few years, this technique has been used to measure the distances to six such sets of masers distributed throughout the Milky Way. Scientists have made similar measurements of maser complexes in the nearby Galaxy M33 that may result in the first direct determination of that galaxy's rotation.

SAO scientists organized and participated in the first intercontinental VLBI observations of methanol masers, a type occurring in the vicinity of other masers but that mark a distinct episode in the development of new massive stars.

Various VLBI arrays were also used to measure the properties of relativistic jets emanating from quasars and active galaxies. The goal is to understand how particles are accelerated to velocities near the speed of light and why they are confined into such well-collimated streams. For example, one experiment using 18 antennas imaged the structure of the jet in the Galaxy M87 with unprecedented clarity. As part of international teams, SAO scientists also conducted VLBI experiments at millimeter wavelengths, achieving resolutions as fine as 50 microarcseconds, or sharp enough to produce images of the core regions of galaxies.

Using a 1.2-meter-diameter radio telescope installed at SAO last year, a sensitive survey of carbon monoxide distribution in the little-studied outer portions of the Milky Way led to the identification of two giant, star-forming regions. Other

observations of carbon monoxide in the nearer Perseus spiral arm of our galaxy provided new details on the size and mass distribution of molecular clouds in the vicinity of stellar associations and supernova remnants, a vital step toward understanding the process of star birth in such clouds.

SAO continued its leadership in the development of instruments for astronomical research, including highly stable atomic clocks built to support programs of VLBI, deep space tracking and national time-keeping. For example, SAO-built clocks played a vital role at those NASA stations around the world monitoring the Voyager spacecraft encounter with Neptune.

Several division projects involve the development of instrumentation for future applications in space and on the ground. The POINTS (precision optical interferometer in space) system will provide astrometric measurements of stars with a resolution of 5 microarcseconds, thus providing data necessary for calibrating the cosmological distance scale as well as for improving tests of general relativity. Another study is analyzing the electrical conductivity and mechanical characteristics of the long tethers to be deployed from the space shuttle. Last, but by no means least, the so-called last frontier of ground-based astronomy soon may be conquered by an array of six submillimeter-wave radio telescopes now being designed at SAO. This past year SAO appointed a project director, and a leader for the receiver laboratory that is developing special, high-technology submillimeter receivers for the array.

Solar and Stellar Physics - Research in solar and stellar physics is concerned with understanding the physical processes underlying the behavior of the Sun and other stars. Stars like the Sun are studied to understand the dependence of observed properties on factors such as their age, composition, and physical association with others in pairs and groups. Of particular interest is the behavior of hot gas under varied conditions--in the Sun's interior, in the outer atmospheres of stars, in the space between the stars, and in the material ejected by young stars and supernovae.

SAO scientists continued their studies of stars in the early stages of development, with an emphasis on the circumstellar disks of gas and dust thought to surround all young stars as the precursors of planetary systems. Dark clouds were surveyed to determine the statistical importance of eruptive disk accretion in star formation. Other studies led to improved understanding of how material from these disks falls onto the surfaces of the still-forming central stars.

Studies of cool stars in binary systems led to the discovery that high-temperature emissions seen from such systems may be the result of collisions of the stellar winds pouring out from the two objects as they orbit each other.

One outstanding question in solar physics is what heats the Sun's corona, or outer atmosphere, and then accelerates it outward into interplanetary space as the solar wind. To investigate that region where the solar wind originates, SAO scientists are preparing an Ultraviolet Coronal Spectrometer (UVCS) for flight aboard the joint U.S.-European Solar Heliospheric Observatory (SOHO) later in this decade. Also, observational and theoretical studies of solar structure, heating, and energy transport by SAO scientists have led them to a new model that seems to account for the previously unexplained near constancy of the solar wind mass flux.

In addition, SAO scientists are studying magnetic activity cycles in other stars for clues to understanding how similar cycles in the Sun produce diverse geomagnetic phenomena and their possible links to terrestrial climate change. A new research tool

being used for these observations is the Automatic Photoelectric Telescope (APT), a fully robotic instrument ideal for long-term monitoring of cyclic behavior. As a leader in the development of APTs, SAO has begun efforts to establish a global network of such instruments.

Optical speckle interferometry is an observing technique used to measure very small angles, e.g., the diameter of a star or the separation between two or more closely spaced objects. A series of several thousand individual frames are taken during each observation and then combined by computer to form a composite image representing the highest resolution attainable by ground-based telescopes. In addition to observations of Supernova 1987A, including the first direct optical measurement of a supernova's expanding shell, SAO scientists used this technique to detect disklike and halolike structures around stars, a possible molecular cloud around the star Mira, and the presence of bright features on the surface of the star Betelgeuse.

Theoretical Astrophysics - Theoretical astrophysicists study the objects and systems of the universe by means of mathematical analysis and computer simulations. Although usually intended to provide interpretations of observed phenomena, this research often results in the prediction of new phenomena not yet seen. Most investigations involve independent work by individual theorists, but collaborations among individuals and other groups at SAO is common, especially in four broad areas: cosmology and the early universe, supernovae and nucleosynthesis, stellar and planetary collisions, and atomic and molecular physics.

One of the most exciting theories of cosmology is the concept of an "inflationary universe," in which the infant cosmos is viewed as having suddenly and dramatically expanded to a significant fraction of current size within a fraction of a second of its creation. Although this theory solves many cosmological problems posed by the observed distribution of matter in the present universe, it is not without its own difficulties. Several investigations this year concentrated on how the geometry of large-scale structure in the universe might be made consistent with inflation models. No success has yet been achieved in solving this baffling problem.

Supernova 1987A was not only a bonanza for observers; it also stimulated much theoretical work on supernova hydrodynamics and related nucleosynthesis. A major surprise was the early detection of nuclear gamma rays from the supernova, thus implying that materials synthesized at great depths had been mixed toward the surface faster than expected. SAO investigations of this problem found that an overlooked process--convection in the supernova's expanding layers--could produce the required mixing.

Even 20 years after the Apollo missions, the origin of the Moon remains a mystery. In one of several computer programs developed at HCO and SAO to simulate stellar and planetary collisions, a planetary body is made to strike the early Earth under conditions that might lead to the formation of a moon. The result of this simulated cataclysm is the creation of a large secondary body with a mass and other physical characteristics similar to our Moon.

Theoretical studies of atomic and molecular physics have produced models for the atmospheres of other planets that may prove helpful in understanding the chemistry, physics, and hydrodynamics of the Earth's own complex, protective, and increasingly beleaguered atmosphere.

Scientific Equipment Replacement and Improvement Program - Since FY 1984, SAO has been undertaking a comprehensive long-term program to replace and improve obsolete laboratory and computer equipment. Additional funding received in FY 1987 offset cumulative erosion of the SAO base in the preceding several years. With these funds SAO made significant progress in developing a network for computers distributed throughout SAO. An Observatory-wide Ethernet system now links a Convex computer, work stations, and their associated disc and tape drives. The Observatory's aging and overworked VAX computers were replaced by a cluster of more modern computers with far greater computing power. In addition, microprocessor-controlled data acquisition and data presentation capabilities were obtained with these funds and substantially enhanced the effectiveness of existing laboratory equipment. Due to the uncompensated effects on the SAO base of promotions, and similar necessary actions, these equipment funds are now in very short supply.

Development of Scientific Instrumentation - Since FY 1989, the Institution has requested support for the nonpersonnel costs for two projects for the Smithsonian Astrophysical Observatory as no-year funding under the Major Scientific Instrumentation line-item:

- the development of an array of submillimeter telescopes;
- the conversion of the Multiple Mirror Telescope.

Both of these cutting edge scientific projects involve the fabrication of major new instrumentation that will take a number of years to plan, design, and complete. The Institution anticipates the development of the submillimeter array to continue through the mid-1990s; it will require total funding currently estimated at \$30 million (1987) or \$32.4 million (1989) for construction on a continental U.S. site; the cost would be about 25 percent higher if the Institution locates the array on a prime mountain site in Hawaii. The conversion of the Multiple Mirror Telescope, which SAO, in collaboration with the University of Arizona, expects to complete by FY 1995, will require total estimated funding from the Smithsonian Institution of no more than \$10 million (1987) or \$10.8 million (1989).

Facilities Development - With funding provided in FY 1988 and FY 1989 as part of the construction appropriation, SAO is designing and will construct a new base camp for the Whipple Observatory. The base camp will include an administrative building for purchasing, fiscal, engineering, and secretarial support; a visitor center, to serve as the focal point for public tours; a vehicle maintenance shop; a warehouse; and outside parking for approximately 60 vehicles to accommodate visitors, staff, shuttles, and heavy equipment used for road maintenance.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, SAO requests an increase of 2 workyears and \$180,000 for atmospheric chemistry studies.

Atmospheric Chemistry Studies (2 workyears and \$180,000) - Atmospheric scientists are reporting thinning of the ozone layer in parts of the Earth's upper atmosphere. Worldwide use of chlorofluorocarbons, which are chemicals used for refrigeration, insulation, and other purposes, and emissions of carbon dioxide, nitrous oxides, and methane are believed by some scientists to be linked to the partial destruction of the ozone layer. These chemicals when released in the air eventually rise into the stratosphere where ultraviolet radiation breaks them down, releasing chlorine or bromine molecules that can contribute to the destruction of the

ozone layer. It is this ozone layer which protects the Earth from harmful ultraviolet radiation.

In order to assess the impact of human activities on the atmosphere, it is necessary to understand the chemical processes that take place there. With funding in FY 1991, SAO will develop its program to measure chemical abundances directly and to compare these measurements with theoretical calculations of the behavior of the volatile ozone layer. Instruments will record these measurements at different altitudes, times of day, times of year, and geographic locations. To interpret these data properly, SAO scientists will coordinate the measurements with their laboratory studies of molecular behavior under the conditions that prevail in the atmosphere.

For FY 1991, the Institution requests funding for two atmospheric physicists to develop instruments to make atmospheric measurements from balloons and spacecraft and to carry out laboratory studies of the spectra of molecules found in the atmosphere.

The global consequences of the depletion of the protective ozone layer could be the destruction of crops, marine life and forest, and the increase in skin cancer and other health problems in humans. Funding for this research will ensure continued contributions to the development of strategies to curb this imposing threat.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Unrestricted general funds come primarily from overhead charged on contracts and grants. These funds are used to support administrative positions and some other administrative costs of SAO. Special purpose funds come from two sources: external users of SAO's Computer Center and the Institution's Trust funds, with the latter providing by far the larger share. Since SAO only "breaks even" in the Computation Facility, there are no funds left over for this use. Trust funds provide direct support for some research as well as for the fellowship and visiting scientist programs, the largest uses of special purpose funds.

Restricted Funds - Restricted funds consist of specific endowments as well as gifts from individuals, foundations, or corporations earmarked for particular research purposes.

Government Grants and Contracts - SAO receives the majority of its funds through government agency contracts and grants for research in its particular areas of expertise and experience. This research is often carried out in cooperation with both government and academic institutions in the United States and abroad. In FY 1991, increased funding is expected through contracts from NASA to SAO for development of instrumentation for the Advanced X-ray Astrophysics Facility (AXAF), the Solar Heliospheric Observatory (SOHO), the Submillimeter Wave Astronomy Satellite (SWAS), and the Large Area Modular Array of Reflectors (LAMAR).

SMITHSONIAN TROPICAL RESEARCH INSTITUTE

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	115	5,777	3	265	-	537	-	61	9	890
FY 1990 -Estimate -Base	131 131	5,910 6,010	3	222	1	355	-	250	12	1,020
FY 1991 Estimate	142	6,457	3	222	1	345	-	275	12	1.020

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	131	11	142
11 Personnel Compensation.....	3,300	340	3,640
12 Personnel Benefits.....	750	102	852
21 Travel.....	201	0	201
22 Transportation of Things.....	53	0	53
23 Rent, Communications & Utilities.....	49	0	49
24 Printing & Reproduction.....	46	0	46
25 Other Services.....	705	0	705
26 Supplies & Materials.....	579	5	584
31 Equipment.....	327	0	327
Total	6,010	447	6,457

Analysis of Increase

Necessary Pay.....	341
Program Funds.....	106

ABSTRACT - The Smithsonian Tropical Research Institute (STRI) is the Nation's premier center for basic research on the ecology, behavior, and evolution of tropical organisms. Located in Panama, STRI conducts scientific investigations throughout the New and Old World tropics. In addition to scientific staff, visiting scientists from the world over conduct research at STRI. The Institute applies results of this basic research to carefully selected conservation and resource management problems, seeking viable alternatives to traditional agricultural and forestry practices that contribute to the massive deforestation of the world's tropical forests. The terms of the Panama

Canal Treaties of 1979 designate STRI as the custodian of the Barro Colorado Nature Monument, a 12,000-acre tropical nature preserve located in the Panama Canal. The preserve consists of Barro Colorado Island (BCI) and five adjacent mainland peninsulas. Other STRI facilities include a marine laboratory at Naos Island (on the Pacific Ocean); a marine laboratory at Galeta Point and a field station in the San Blas Islands (both on the Atlantic Ocean); and a research library, laboratories, conference and study facilities, and administrative headquarters in Panama City. STRI scientists also engage in collaborative research with colleagues in U.S. universities and in other tropical countries, including Malaysia, India, Madagascar, Kenya, Senegal, Costa Rica, and Venezuela.

For FY 1991, STRI requests an increase of 2 workyears and \$106,000 for global change research. The Institution requires \$341,000 for Necessary Pay for existing staff in this line-item.

PROGRAM - The Smithsonian Tropical Research Institute is the Nation's leading international center for basic research in tropical biology. STRI performs four major functions:

- conducts fundamental research on the ecology, evolution, and behavior of tropical plants and animals, including mankind;
- provides major facilities and logistical support for the international scientific community to study both terrestrial and marine tropical biology;
- supports environmental education, conservation and management of tropical ecosystems;
- protects and manages the Barro Colorado Nature Monument under a treaty-assigned responsibility.

A compelling need exists for improved understanding and conservation of tropical ecosystems. Conversion of tropical forest to scrub and grassland can affect regional and even global climatic patterns. It may adversely affect the North American environment. Extinction of species eliminates potential sources of medically and commercially important natural products. STRI's basic research provides the essential science base for the effective management and conservation of these resources.

In FY 1989, STRI continued its long record of progress and achievement in research, facilities development, and international education and conservation. Research publications from work done at the Institute should exceed the more than 200 published in 1988. STRI's annual report and STRI Contributions to Research, an annual offprint of STRI publications, summarize current research projects. Descriptions of significant accomplishments and major program activities during FY 1989 follow:

Greenhouse Gases and Tropical Forests - Tropical forests absorb large amounts of carbon dioxide, an atmospheric gas strongly implicated in the greenhouse effect and global warming. STRI scientists, in collaboration with scientists at the Smithsonian Environmental Research Center in Edgewater, Maryland, have begun the first-ever studies on how carbon dioxide affects tropical plants. The studies include raising common tropical plant species at normal and twice-normal concentrations of carbon dioxide.

Raised carbon dioxide led to increased growth, photosynthesis, and efficiency of water use, and decreased respiration. Species varied strongly in their responses, indicating that rising carbon dioxide may alter the structure and dynamics of tropical forests. The results also suggest that intact tropical forests can help reduce the rate at which atmospheric carbon dioxide increases over the next decade. The next stage of this work will involve studying the effects of carbon dioxide in the upper forest canopy, where most growth and photosynthesis occurs.

Ecological Interactions between Animals and Plants - Tropical forests contain a wide range of species that are potential sources of medicines. Exploring plant-animal interactions is an excellent way to identify candidate medicines. STRI scientists have found that a common caterpillar protects itself from predators by feeding on a plant that contains compounds that most insects find unattractive or even poisonous. The chemicals affect sugar metabolism, and recent tests show that they are potentially useful in the treatment of a wide variety of disorders, from obesity to diabetes to AIDS. They also hold promise as a deterrent to insect pests such as locusts.

This research originally sprang from the interest of scientists in the striking migratory habits of the moth adults of the caterpillar. It demonstrates the potential spin-offs of ecological research and the serendipitous nature of many important scientific discoveries.

International Forest Dynamics Project - The origin and maintenance of the great species richness in the tropics is a fundamental research interest at STRI. One important, long-term component of this program is the International Forest Dynamics Project, begun by STRI in 1980 with a 124-acre forest plot on Barro Colorado Island. STRI researchers supervise the mapping and measurement of more than 250,000 trees on the site every five years. The program has established sister plots in Malaysia and India and plans plots in other tropical countries.

A just-completed census of the Malaysian plot confirms the enormous biological diversity of tropical rainforests. Scientists have found 835 tree species, more than occur in all of the United States and Canada and more than twice the number found in the plot on Barro Colorado Island. The number of species in the Malaysian plot is the highest number recorded on a plot of this size.

From a knowledge of tree densities in tropical forests and their rates of survival, growth, and recruitment, foresters will be able to rapidly identify native species that have a potential for commercial reforestation. Because of the great species richness of many tropical forests and the low density of individual tree populations, researchers can obtain this information only from large-plot studies such as those conducted by STRI.

Effects of Global Change on Marine Species - The ocean conditions on which marine life depends may change substantially as a result of global warming. STRI scientists are examining potential changes through the long-term study of several species, primarily fishes.

Most species of tropical reef fishes reproduce by periodically sending larval brood off into the open ocean to grow. The young later return to settle near the shore. Previously, many scientists thought that ocean conditions in the tropics did not affect this recruitment. STRI scientists have been testing this and other hypotheses for several years by monitoring spawning and settlement of fishes in the vicinity of the San Blas field station and the Naos marine laboratory.

All fishes studied so far have species-specific seasonal patterns of settlement that are in fact strongly affected by ocean conditions. The effect is strongest in the Pacific, where the environment shifts substantially between wet and dry seasons. The changes in ocean conditions that scientists expect as the Earth warms may therefore have severe effects on populations of fishes, many of which are important sources of food.

Biological Catastrophes - STRI's long-term basic research programs provide a context for evaluating environmental catastrophes. A major oil spill occurred in April 1986 near STRI's Galeta marine laboratory on the Atlantic coast of Panama, significantly affecting marine and intertidal communities. STRI is conducting a five-year study on the impact of the oil spill on biological communities for the Minerals Management Service of the U.S. Department of the Interior. The Institute coordinates an international team of more than a dozen scientists to compare the recovery of biological communities in spill-affected areas with natural population variation prior to the spill. Damage to coral, seagrass, and mangrove communities has proven to be more severe and enduring than suggested by less rigorous studies elsewhere. This work is providing invaluable guidelines for management of oil spills in tropical and semitropical marine habitats. The findings are possible only because of the rigorous prespill research STRI conducted in the area.

Conservation Research - STRI scientists are developing agro-forestry techniques to produce a sustained-yield, economically viable buffer zone for the Barro Colorado Nature Monument. This zone will provide added protection against agricultural encroachment, regional climatic change, hunting, and forestry harvests. Scientists have planted both native and introduced species of trees and crops together in a 2.5 acre "Forest Garden." All foliage in the plot is palatable to livestock. Many species fix nitrogen and improve soil fertility. Researchers can use the project as a model for expanded agro-forestry in the deforested areas within the Panama Canal watershed. It is also a model for buffer zone projects elsewhere in the tropics.

Molecular Evolution and Plant Physiology Initiative - With funding provided in FY 1988 and FY 1989, STRI has established a research program in molecular evolution and plant physiology. While STRI scientists have always made some use of molecular and physiological techniques, this support significantly enhanced their ability to undertake major research in these fields.

Molecular evolution studies permit STRI scientists to address basic questions concerning processes of species formation, the maintenance of genetic variation in populations, and the nature of population differentiation. The program has already yielded intriguing and even surprising results on how barriers like the Isthmus of Panama affect evolution and how the reproductive biology of a species affects its genome. Studies of tropical plant physiology are providing essential insights into the nature of plant adaptation to environment, information necessary to apply basic knowledge to the urgent problems of forest conservation and management.

Visiting Scientists - STRI promotes additional basic research in tropical biology by hosting several hundred students who work in association with the staff and visiting scientists from many countries. These scientists can pursue research in biologically rich environments without being intellectually isolated. Hundreds of scientists from major universities and research institutions from most of the States and all over the world ensure a continuing infusion of new ideas leavened by the long tropical experience of STRI's permanent staff.

During FY 1989, scientists from Princeton University and the U.S. Geological Survey continued research on the role of tropical forests and wetlands in the production of greenhouse gases, including methane and carbon dioxide. These gases have significant effects on regional and global climatic patterns. Deforestation and agriculture are likely to alter the dynamics of gas production and circulation, further complicating predictions about the future of tropical and extratropical climates.

Publications - Work at STRI resulted in the publication of more than 217 scientific papers and books during calendar year 1988. Staff and visiting scientists are currently involved in more than 160 research projects that will produce at least the same number of publications.

Fellowships, Conservation, and Environmental Education - Because of its location in Panama, STRI is in an excellent position to play two significant roles in the study and conservation of tropical environments. First, STRI actively engages in the education of creative scientists from tropical and nontropical nations. Approximately 80 men and women (half from Latin America) representing a dozen nations participated in STRI's academic programs in FY 1989.

Second, STRI is aware that the survival of tropical ecosystems depends on the combined efforts of international organizations, governments, the private sector, and people in the tropical countries themselves. STRI is both a committed leader and participant in tropical conservation efforts.

STRI's premier reference library for tropical studies enhances its educational function in tropical biology by serving STRI's staff, visiting scientists, and students from universities and secondary schools in Panama. Currently, the library serves more than 1,000 patrons per month.

STRI is deeply involved in conservation activities. The Institute works actively with the Asociacion Nacional para la Conservacion y la Naturaleza, a local affiliate of the Nature Conservancy, in its efforts to purchase and protect endangered natural areas. STRI also works closely with the Kuna Indians in their conservation and environmental education efforts in Kuna Yala, their autonomously governed reservation on the Caribbean coast of Panama.

STRI research is providing protocols for the eventual domestication and use of wild species as a standard component of Panamanian agriculture. Studies of fast-growing plantation trees and new crop plants are in progress on the mainland west of Barro Colorado Island. The results of these studies will provide local farmers with sustained-yield agricultural techniques that will eliminate the need to continually remove forest to provide new crop land.

Because the primary emphasis of STRI continues to be basic research, its understanding of tropical organisms and environments deepens and broadens over time. As a result, STRI is better capable of applying this knowledge to the increasingly serious environmental and economic problems confronting tropical countries. STRI's educational programs are producing greater interest and expertise among students in the tropics in the application of basic knowledge to practical problems.

Facilities - STRI's research facilities in Panama include the Barro Colorado Nature Monument, marine laboratories at Naos Island and Galeta Point, a field station in the San Blas Islands, and a cloud forest station at an elevation of 6,500 feet in

western Panama. STRI also operates a research vessel for studies in both the Atlantic and Pacific Oceans. These facilities also serve as the home base for STRI programs in comparative and experimental research at numerous other sites throughout Panama and in other tropical countries.

The new Tupper Laboratory and Conference Center became operational during 1989. This facility provides STRI scientific staff and visiting scientists with modern office, laboratory, and conference facilities similar to those at major research universities. It supports development of plant physiology, molecular evolution, and global change programs at STRI. During FY 1990, STRI will complete construction of the new dormitory, kitchen, and dining hall on Barro Colorado Island, which will provide modest living facilities for the large number of researchers who use BCI.

As part of the Smithsonian's FY 1990 construction appropriation, STRI received funding to build a new laboratory and dormitory at Galeta, and a new, larger field station in San Blas. STRI also received funding to design an 80-foot research vessel that will replace the aging R/V Benjamin.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, STRI requests 2 workyears and \$106,000 for global change research.

Global Change (2 workyears and \$106,000) - Tropical environments are changing rapidly. Deforestation proceeds at an unprecedented rate, threatening the extinction of many species before science has a chance to understand their ecological roles and explore their possible benefits. This destruction may have global consequences through effects on atmospheric water cycles, the production of greenhouse gases, siltation of coastal marine habitats, and other pathways.

The Isthmus of Panama is a key region for examining global change from both a biological and geological perspective. STRI's permanent base in the tropics and multifaceted approach to tropical research make it uniquely suited for global change studies. The protected forest of the Barro Colorado Nature Monument is the only mainland tropical area under U.S. custodianship where long-term ecological studies are conducted.

STRI proposes to enhance its program in three aspects of global change research: long-term physical and biological monitoring, investigating the biological and geological mechanisms of change, and conservation and management studies. The Institute foresees an eventual program of 12 fully supported scientific staff in the areas of paleontology, human biology, atmospheric sciences, environmental physiology, and conservation science, with full implementation achieved in FY 1994.

For FY 1991, STRI requests funding to hire a scientist and technician for the program (2 workyears and \$101,000) and for supplies and materials (\$5,000) for the scientist. While recruitment for the new positions is pending, the Institution will require salary lapse (estimated \$51,000) for the purchase of equipment, supplies and travel. STRI will request additional funding in subsequent years to hire and support additional scientists and technicians.

The urgent issues of deforestation, global warming, and other aspects of global change demand forceful attention. STRI has been performing research with relevance to these issues for more than 60 years. With STRI's experience, locations, and newly enhanced research facilities, expansion of its program in global change research will

permit STRI to increase its contributions substantially in this important area of inquiry.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds derive from a variety of sources, including receipts and collections from users of Barro Colorado Nature Monument facilities (20 U.S.C. 79b (d)) and annual allotments. Such funds support, in part, the salaries and related costs of the fellowship program, the senior sabbatical program, insurance, supplies, and a long-term collaborative research program with the Forest Research Institute in Malaysia. Funds also support a short-term fellowship program in tropical biology; visiting scientists and students; field research; seminars and lectures; and environmental, conservation, and educational activities in Panama.

Restricted Funds - Funds are in the form of restricted endowments that specify the use of the donation or bequest and gifts and grants from individuals, foundations, organizations, or corporations for specific purposes. These funds further scientific research related to the biological, ecological, and behavioral processes that serve as the basis of tropical ecosystems; research related to geophysical events; publication and distribution of research results; and studies relating to endangered tropical environments. Continuing support from the Exxon Corporation provides short-term tropical biology fellowships and assistance to 30 students from developing Latin American countries.

Government Grants and Contracts - Beginning in FY 1987, the Minerals Management Service of the U.S. Department of the Interior awarded an over \$4 million contract to fund a five-year study of the catastrophic oil spill at the Galeta field station.

SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	30	1,426	2	98	-	111	-	30	2	382
FY 1990 -Estimate	37	1,837	2	100	-	98	-	22	2	390
-Base	37	1,872								
FY 1991 Estimate	39	2,071	2	100	-	99	-	15	2	400

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	37	2	39
11 Personnel Compensation.....	1,044	77	1,121
12 Personnel Benefits.....	260	22	282
21 Travel.....	30	0	30
22 Transportation of Things.....	2	0	2
23 Rent, Communications & Utilities.....	3	0	3
24 Printing & Reproduction.....	5	0	5
25 Other Services.....	183	10	193
26 Supplies & Materials.....	195	90	285
31 Equipment.....	150	0	150
Total	1,872	199	2,071

Analysis of Increase

Necessary Pay.....	49
Program Funds.....	150

ABSTRACT - The Smithsonian Environmental Research Center (SERC) in Edgewater, Maryland, performs basic scientific research on coastal land/water systems. SERC currently occupies 42,000 square feet of laboratory, office, educational, and support space and 2,600 acres of land on the Rhode River, a tidal river system. The interdisciplinary staff, visiting scientists, and students study how land use, air quality, and weather variations affect the movement of nutrients, eroded soil, and other materials through the system; the dynamics of plant and animal populations; and the overall health of the system.

For FY 1991, SERC requests 1 workyear and \$150,000 to reinforce its capabilities to collect and analyze research data on global change. The Institution requires \$49,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - SERC research aims to attain a better overall understanding of how coastal land/water environmental systems function. Research staff address a wide variety of ecological questions while conducting a long-term interdisciplinary study of a tidal subestuary of the Chesapeake Bay (Rhode River) and its watershed. This watershed contains a mosaic of upland and floodplain forests, marshlands, cropland, pasture, abandoned fields, and residential areas typical of the mid-Atlantic Coastal Plain. The Center has studied such problems as the effects of herbicides on plants in the Chesapeake Bay, the effects of acid rain on deciduous forest and fish reproduction, the role of riparian forests in alleviating pollution from agriculture and the effects of increasing concentrations of atmospheric carbon dioxide on natural communities.

Research Results - As part of a worldwide emphasis, SERC is conducting studies on the impact of global climate change on the environment. SERC published conclusions from three years of field research on the effects of elevated carbon dioxide concentrations on Chesapeake Bay tidal marshes. Researchers at SERC believe rising atmospheric carbon dioxide will have a major impact, both negative and positive, on climate and vegetation. To study this impact, SERC scientists compared *Scirpus olneyi* and *Spartina patens* communities. These species have different photosynthetic mechanisms for carbon reduction, and laboratory studies have found significant differences in their responses to elevated carbon dioxide. For *Scirpus*, elevated carbon dioxide resulted in increased shoot density (30 percent), above and below ground plant material (30 percent and 27 percent, respectively), water use efficiency (133 percent), carbon/nitrogen ratio in above-ground tissues (30 percent), and net photosynthesis (15 percent). However, with increased carbon dioxide, night-time respiration was decreased (40 percent) and the onset of fall senescence was delayed. For *Spartina*, elevated carbon dioxide had relatively little effect, but water use efficiency increased (77 percent) and night-time respiration decreased (32 percent). Based on the positive effects of elevated carbon dioxide on *Scirpus* and the negligible effect on *Spartina*, SERC scientists would expect *Scirpus* to become the more dominant species.

Understanding how the Earth's atmosphere interacts with forests is crucial to understanding and predicting how climate change will proceed and how altered atmospheric composition will affect forest ecosystems. SERC researchers are studying this phenomenon in a plot of forest at the Edgewater site in Maryland. The scientists studied the chemical interactions of rainwater with the leaves of this area. Leaf species and solution pH (acidity level) both affected the leaching of inorganic ions from seven species found on the site. Decreasing rainwater pH increased the rate of leaching of calcium and magnesium for all species, and the leaching rate of potassium and ammonium for most species. Most species take up sulfate at increased acidity levels. The studies indicate that the increased acidity of rainwater increases foliage nutrient loss through leaching.

SERC scientists continue long-term ecological studies of a dry tropical forest in the state of Quintana Roo, on the Yucatan Peninsula of Mexico. Results over a four-year period show significant annual differences in tree growth and litter production in response to variation in rainfall. However, blossoms and fruit production remained constant year to year. In September 1988, Hurricane Gilbert, the most intense tropical depression ever measured in the Caribbean, impacted this forest. The

hurricane left trees standing but defoliated, with damage to most branches. Sprouting of new growth began within three weeks. Vines sprouted profusely in the understory. Leaf litter production nearly doubled. Scientists will follow the recovery of this forest from the hurricane in order to better understand the dynamics of these widespread but little-studied dry tropical forest ecosystems.

The Rhode River estuary is an extremely productive ecosystem. Past SERC research has shown that most of the primary production in this estuary is due to phytoplankton. New studies have focused on the role of planktonic microzooplankton in regulating these phytoplankton populations by grazing. Scientists use dilution and fluorescent dye-labeling techniques to measure grazing rates of specific zooplankton and the overall impact of zooplankton community grazing. In various field experiments, overall grazing by zooplankton reduced phytoplankton potential growth by 45 to 100 percent. The effects of phytoplankton density and species composition as well as the zooplankton species composition are important determinants of grazing rates. A better understanding of these grazing dynamics in conjunction with the effect on phytoplankton growth of nutrients, suspended sediments, light intensity, and dilution rates will allow a better understanding of phytoplankton populations in estuaries.

Solar Research Studies - The Smithsonian pioneered studies in the collection of data on the intensity and spectral distribution of solar radiation on the Earth's surface. For the past several years, a cooperative arrangement with the National Oceanic and Atmospheric Administration (NOAA) has enhanced these efforts. NOAA has provided office and laboratory space and utilities and has helped operate Smithsonian ultraviolet spectral radiometers at NOAA stations for Global Monitoring of Climatic Change (GMCC). These measurements permit calculation of the concentration of ozone in the atmosphere and the dose of harmful ultraviolet (UV) radiation at the Earth's surface. When ozone concentrations decline, UV doses on Earth increase, with potentially serious consequences. These Smithsonian UV measurements span a complete sun spot cycle, which averages 11 years. These unique data demonstrate the strong interaction of the solar sun spot cycle with the dynamics of ozone concentration changes in the stratosphere. The GMCC network will place into operation a new generation of spectral radiometer, under development at the Smithsonian, in FY 1990. It will allow more refined analyses of the atmospheric dynamics of ozone as well as applications in other regions of the solar spectrum.

Educational Activities - SERC provides a broad range of educational activities, including teacher-led field trips, self-guided nature trails, and guided tours. Groups of students and the general public observe firsthand a variety of natural habitats. A work/learn program enables students to work with scientists, both in the field and in the laboratory. Predoctoral, postdoctoral, and sabbatical programs for professionals at all levels enable visiting researchers to carry out collaborative or independent research at SERC. The results of SERC's research are disseminated through scientific journals, national and international scientific meetings and seminars, the training of scientists, and public education activities.

Facilities - In June 1989, the new Charles McC. Mathias Jr. Laboratory at SERC opened. The laboratory is named for Senator Mathias of Maryland, who served in the U.S. Senate from 1968 to 1986, and who championed legislation to protect the Chesapeake Bay during his Senate career. Constructed as an addition to an existing building, the Mathias Lab provides office and lab space for research programs focusing on ecological interactions that take place on the land and the estuary through the watershed, as well as multidisciplinary research on plant and animal communities and human impact on the landscape. The laboratory also has an instrument room and

controlled chambers for growing experimental plants. The opening of the laboratory increased existing laboratory space at SERC by about one-third.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, SERC requests an increase of 1 workyear and \$150,000 to reinforce its capabilities to collect and analyze research data on global change.

Global Change Research (1 workyear and \$150,000) - The need and urgency for global change research is well recognized both nationally and internationally. SERC is already deeply involved in relevant research at its Edgewater, Maryland site and at field research locations around the globe. To keep pace with the expanded study and collection of data on this subject, SERC requires additional personnel and advanced computer technology to properly manage and analyze this information.

As part of this research, SERC is studying the effects of increased atmospheric carbon dioxide concentrations and the interactions of the earth with the forest canopy. SERC is also working with the Smithsonian Tropical Research Institute (STRI) on a global change project. This program will compare data on the interaction of the atmosphere in the forest ecosystems at Edgewater with similar data from Barro Colorado Island in Panama. With funding provided in FY 1990, SERC will hire two environmental engineers to conduct this research, one stationed at SERC and the other at STRI.

Global change initiatives, such as these, generate immense volumes of data. The proper management and analysis of these data bases are essential for accurate reporting of research results. For FY 1991, SERC requests funds to hire an ecosystem modeler to manage and analyze the data bases. Funds also will support the upgrading of the SERC computer system.

The importance of global change underscores the growing need for continued research. The results of this research will increase the nation's and the world's understanding and knowledge of this subject and, therefore, assist scientists in developing future solutions to the problems associated with global change.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds, provided by allotments, support special events, work/learn and fellowship programs, and the salary costs of a docent coordinator and a public program director.

Restricted Funds - Donations, bequests, and foundation grants designated for specific subjects of investigation constitute these funds. For FY 1990, a grant from the World Wildlife Fund will continue to support investigation of the effects of land use changes in the Yucatan Peninsula upon migratory bird populations that nest in the Chesapeake region and winter in Mexico.

Government Grants and Contracts - Various Federal and State agencies supply funds for special projects conducted at SERC utilizing the expertise of the staff and the unique physical site characteristics. A grant from the Chesapeake Research Consortium supports research on the nutrient dynamics of the Chesapeake Bay watershed system, while a grant from the U.S. Department of Energy advances the study of greenhouse effects on marshes.

NATIONAL ZOOLOGICAL PARK

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	339	14,190	1	144	3	616	1	317	-	207
FY 1990 -Estimate	349	14,569	1	134	3	661	1	1,223	-	132
-Base	349	14,896								
FY 1991 Estimate	354	15,391	1	134	3	677	1	1,574	-	120

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	<u>Base FY 1990</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1991</u>
FTE Allocation.....	349	5	354
11 Personnel Compensation.....	10,957	385	11,342
12 Personnel Benefits.....	1,850	85	1,935
21 Travel.....	58	0	58
22 Transportation of Things.....	12	0	12
23 Rent, Communications & Utilities.....	78	0	78
24 Printing & Reproduction.....	19	0	19
25 Other Services.....	408	0	408
26 Supplies & Materials.....	1,289	25	1,314
31 Equipment.....	207	0	207
Collections Acquisition.....	15	0	15
42 Insurance Claims & Indemnities.....	3	0	3
Total	<u>14,896</u>	<u>495</u>	<u>15,391</u>

Analysis of Increase

Necessary Pay.....	395
Program Funds.....	100

ABSTRACT - Since 1889, the primary mission of the National Zoological Park (NZP) has been the advancement of science and the instruction and recreation of the people. The Zoo's living collection, open to the public, occupies 163 acres at Rock Creek Park in Washington, D.C. The Zoo also maintains the Conservation and Research Center (CRC), a major conservation, animal breeding, and research facility on 3,150 acres in Front Royal, Virginia. Through its programs in research, conservation, animal health,

and education, NZP serves the public and specialized audiences and promotes understanding of animal adaptations and evolution and the interaction of wildlife with the environment.

For FY 1991, the National Zoological Park requests an increase of 2 workyears and \$100,000 to support its global change program. The Institution requires \$395,000 for Necessary Pay for existing staff in this line-item.

PROGRAM - The major programs of the National Zoo are living exhibits, animal management, animal conservation and propagation, research, and public education and information. At the Rock Creek site, NZP cares for more than 4,544 animals comprising 481 species and approximately 1,400 plant species. The Zoo chooses its species primarily for their interest to the public and their contribution to research and conservation. At the Conservation and Research Center, the Zoo maintains over 700 animals representing 38 species whose status in the wild is precarious. These animals form the basis for the Center's long-term breeding and research program.

The National Zoo has certain features in common with other Smithsonian public facilities and some features that are unique within the Smithsonian Institution. Through its public functions of education and recreation, entertainment in the broad sense, the Zoo seeks to enhance public awareness about biology and related subjects. The Zoo concerns itself with all aspects of animal and plant life, both terrestrial and aquatic, small and large, past and present.

Since its first appearance, humankind has been an increasing influence on life on Earth, and biological history is an increasing concern of the Zoo as it attempts to represent the whole of life on earth, plant and animal, in all its complexity and glory. To this end, the Zoo will transform the animal-only zoological park into a biological park that will highlight the relationships of animals and plants. By displaying the spectacle and beauty of life on Earth, the BioPark will instill in visitors a concern for the future of all life in all its forms. This holistic approach will combine living exhibits of plants and animals with museum-type exhibits of structures, such as skeletons and fossils, and will make correlations with other Smithsonian entities.

Living Exhibits - The National Zoo exhibits animals primarily to excite Zoo visitors about biology and the natural world. It is rapidly shifting its focus from animal exhibits to BioPark themes, shedding traditional divisions between plants and animals, aquatic and terrestrial life, vertebrates and invertebrates, and even science and art. Museum exhibits have long put living things in separate aquariums, botanical gardens, and natural history and art museums. The BioPark emphasis displays the interrelation between plants and animals, living and extinct organisms, water and land, form and function. The idea of the BioPark also extends beyond formal exhibits to encompass such areas as butterfly gardens, which grow food plants to attract species of a local butterfly. Colorful graphics and labels identify the butterflies and the plants on which they feed. The BioPark will also show the effect of human activities on nature, including domestication, farming, hunting, and art.

In FY 1989, the Zoo opened a new 700-square-foot bat exhibit, located on the ground floor of the Lion-Tiger Exhibit. Visitors enter a cave where 160 bats of two species fly actively back and forth and roost on dead tree limbs and in a hollow tree. A pool and waterfall further enhance the exhibit.

The Zoo reopened the renovated elephant house in 1989. The interior of the building now features new sky lights and extensive planters full of tropical plants. The outside exhibits for elephants, rhinos, and hippos are in the process of renovation to provide a more pleasing naturalistic setting for the animals. The Zoo revised all interpretive materials in the elephant area including signs that explain important features of the biology of the animals.

The newly renovated Wetlands Exhibit, located in front of the Bird House, also opened in FY 1989. This naturalistic, thoughtful setting, surrounded by aquatic plants, will come alive each spring with the elaborate courtship rituals of ducks, geese, and swans.

Dorcas gazelles, hammerhead bats, spider monkeys, piping guans, emerald tree boas, and water dragons were among the nearly one thousand births and hatchings at the Zoo in 1989. Included in this total are some endangered species, such as Cuban crocodiles, Guam rails, Bali mynahs, and golden lion tamarins. Two new endangered species acquired by the Zoo, the Micronesian kingfisher and Sumatran tiger, are significant additions to the Zoo's exhibit program.

Animal Management - Two veterinary hospitals, one at Rock Creek and one at Front Royal, serve as the backbone of the medical and research programs of the Zoo's Department of Animal Health (DAH) and Department of Pathology (DP). The good health of the collection results from an aggressive approach and strong preventive medical program, with laboratory and pathology support from DP for all medical programs. The current medical case load consists of approximately 3,300 cases each year with about 525 animals hospitalized and 300 animals quarantined before joining the collection.

Some recurring medical problems become projects for the Zoo's applied clinical research program. These projects include a study of the epidemiology, treatment, and control of Shigellosis in primates, especially the Zoo's gibbons. Shigella infections, common in primates, cause morbidity and death and are a public health concern for the keepers. This study will use a new generation of antibiotic to eliminate the carrier state of the disease, followed by a vaccine to prevent its recurrence. The results of this study will help protect other primate collections and help explain how the disease affects humans. While studying the effect of the antibiotic, researchers will measure its level in the animals to ensure an adequate, but nontoxic dose. Zoo researchers are running this antibiotic study concurrently with similar studies on the Zoo's patient populations, including free-living elephants in Africa and cuttlefish housed in the new invertebrate facility.

Cystinuria, complicated with kidney and bladder stones, is an ongoing problem among the Zoo's maned wolf population. Researchers have tried surgical treatment for the stones with only short-term results. Studies assess whether diet is one method of control. Other studies assess whether new drug treatments for stone formation in humans can apply to wolves. This drug may help in treating the endangered maned wolves, 85 percent of which test positive for cystinuria.

The Zoo's studies of anesthesia continue, both in the collection animals at NZP and in free-living animals in Africa, Australia, and Brazil. Safe anesthesia is mandatory for medical and surgical care and aids in field studies of free-living species. The Zoo also uses applied clinical research on free-living specimens to better understand the medical problems of captive populations. For example, some scientists question the reliability of intradermal tuberculin in diagnosing tuberculosis (TB) in elephants. The staff tested free-living elephants in Africa,

where TB was not reported, and found that some animals reacted positively to the TB test. This result has led to further study of blood and tissue samples. That will explain the causes of the apparent false-positive reactions, a continuing enigma in many nondomestic hoofstock.

Other problems the staff is studying include diaphragmatic defects in captive golden lion tamarins, a species the Zoo is reintroducing to wild populations in Brazil. One question concerns whether the reintroduction of this species of tamarin can endanger the free-living species. To answer the question, the staff will conduct a field study in Brazil using radiographs and ultrasound to evaluate the wild population for the diaphragmatic defects, and ovarian cysts. Once researchers determine the status of these wild tamarins, then they can make decisions about which animals to release. DAH is also diagnosing and evaluating other medical problems in golden lion tamarins such as gallstones and ovarian cysts.

During FY 1989, DAH developed and organized a national workshop on "Research Priorities for Single Species Conservation Biology," cosponsored with the National Science Foundation. For four days, Zoo staff and renowned experts in reproduction, natural populations and release biology, and small population biology exchanged insights. One outcome was a detailed document that identifies specific research areas of conservation biology worth Federal and private research support.

DAH's Reproductive Physiology Programs (RPP) continued their pioneering role in applying biotechniques to studying and conserving endangered species. Little data on breeding wild animals exist, and scientists have debated the best reproductive techniques for enhancing breeding and maintaining genetic diversity in wild animal stock. A sound understanding of reproductive processes is necessary for enhancing the breeding of any species. By taking a physiological research approach, scientists have achieved many improvements in the domestic livestock industry and many clinical successes in overcoming human infertility.

The objectives of the RPP are to:

- study the breeding process in some captive and free-living wildlife species;
- use biotechnology to assess and combat infertility;
- consider the application of artificial breeding of captive endangered species;
- create an international genetic resource to maintain biodiversity.

In 1989, RPP continued research efforts in endocrinology, embryology, fertility, and sperm/embryo freezing. Major research grants from the National Institutes of Health, the Scholarly Studies Program of the Smithsonian Institution, the U.S. Fish and Wildlife Service, and the National Science Foundation expanded these programs.

The Endocrine Research Laboratory (ERL) continued to make great strides in the noninvasive monitoring of hormones in wildlife species. Zoo staff completed projects to document the breeding cycle of the endangered Eld's deer, Pere David's deer, and Przewalski's horse. Researchers refined techniques for diagnosing pregnancy and gestation in these species, thereby enhancing species recovery plans. The staff developed new laboratory techniques to study, for the first time, the unique endocrine system of the free-living dwarf mongoose in the Serengeti National Park. This species

lives in packs in which only one adult female actively reproduces. Zoo researchers speculate that these studies will reveal how dominance behavior affects breeding success.

The ERL applied urinary hormone technology for the first time in 1989 to the seasonally breeding male Eld's deer. Little is known about the endocrine systems of male wildlife species, and the Zoo hopes that this research will lead to the regulation of testis function, thereby improving the breeding chances of subfertile males. The past year also brought a new research fellow to the ERL, an expert in monitoring hormonal levels in fecal material. This technique gives another noninvasive way to assess breeding status in nervous wildlife species. A long-term project in the Mikumi National Park, Tanzania, uses this technique to study dominance behavior in free-living baboons.

The RPP continues its leadership in studying sperm and egg interaction in carnivores. Researchers completed many basic projects to refine laboratory techniques for in vitro fertilization (IVF) in domestic and rare species of cats. Staff placed particular emphasis on the effect of abnormal sperm, common in many endangered species, on the IVF process. New results showed that IVF could produce embryos of a highly endangered subspecies, such as the Florida panther, even when using 99 percent abnormal sperm. These new findings provide hope that rare animals, even those that are infertile, can reproduce by reproductive biotechnology.

The newest direction in embryology research involves taking genetic material from animals that die abruptly. Immature eggs can be collected directly from the ovaries of such animals, stimulated to grow and mature in vitro and then used to produce embryos by IVF. Studies in the domestic cat showed that 54 percent of collected eggs would mature in the laboratory, and 34 percent of these fertilized and developed to 16-cell-stage embryos. Researchers have started pilot projects using ovaries collected from the bobcat, tiger, leopard, and puma. Comparable maturation rates have resulted and some of these eggs have fertilized in vitro.

The Zoo continues to explore new methods for evaluating fertility and for artificially breeding rare species. Staff modified the in vitro fertilization system to assess fertility in some rare species. In 1989, researchers completed major studies documenting the usefulness of laboratory tests for evaluating fertility of domestic and nondomestic cat species. They also developed new techniques that could use IVF to assess the fertility of free-ranging species. Procedures using salt-stored eggs, for example, could assess the semen quality of species in the field. Two major field projects in the Kruger National Park also have provided new information. One field project involved studying the breeding season and endocrine system of the free-living impala and cape buffalo. The other involved the response of male African elephants to a synthetic hypothalamic hormone. It will help develop hormone treatments that control the unpredictable and aggressive behavior of captive bull elephants, thereby improving the safety and efficiency of captive breeding programs.

DAH has played a major role in the Zoo's black-footed ferret breeding program. Working with the Conservation and Research Center staff, DAH monitored the breeding activities of females by examining vaginal cells to decide the best time to introduce the male, a technique that could also detect vaginal sperm. Even though all the Zoo's animals were young and sexually inexperienced, three of four females became pregnant. They produced seven offspring, five of which survive. Research in the artificial breeding of ferrets continued. Artificial insemination produced young in the closely related Siberian Polecat. Sperm that had been frozen and then thawed were deposited

directly in the uterus using a laparoscope. In 1989, the same procedure successfully produced domestic kittens for the first time. This procedure holds promise for a variety of rare species of cats.

Animal Conservation and Propagation - The Conservation and Research Center plays a leading role in wildlife conservation through its programs in breeding endangered species, inter-disciplinary research, and international training. CRC provides a unique environment for long-term breeding of endangered species, including mammals such as black-footed ferrets, Przewalski's horses, Arabian oryx, Burmese brow-antlered deer, clouded leopards, maned wolves, and red pandas, and birds such as Guam rails, Micronesian kingfishers, Bali mynahs, and red-crowned and white-naped cranes. The Center is one of two facilities in the country that is presently breeding black-footed ferrets. The success of this program is extremely encouraging, and plans are now underway to begin reintroducing captive-bred ferrets to the wild in 1991. To ensure that these reintroductions are successful, the Center's staff have been using the Siberian Polecat as a research surrogate to develop and test various rearing, pre-release conditioning, and reintroduction methods. The past year also saw a major step forward in the rescue program for the Guam rail, a species that was extirpated from the wild by an introduced snake and has been maintained only in captivity since 1985. In cooperation with the Government of Guam, the Commonwealth of the Northern Marianas, the U.S. Fish and Wildlife Service, the University of Tennessee, and 12 mainland zoos, captive-bred rails are now being reintroduced to the snake-free island of Rota. The Center initiated a research and breeding program for Hawaiian birds during the past year with the acquisition of six Amakihi. Although not endangered, these small Hawaiian birds are part of a cooperative program to develop capture, transport, breeding and husbandry procedures that can be applied eventually to other closely related, and highly endangered Hawaiian species. The program will expand in the next year with the acquisition of two additional species--the Iiwi and Omao. Zoo staff members are managing many other endangered species at the Center under cooperative Species Survival Plans. Through these programs, the Zoo will continue its leadership role in endangered species propagation, research, and reintroduction.

Besides the research activities of the Zoo staff, CRC continues each year to serve more than 30 visiting scientists, students, and volunteers who conduct research on animals in the collection or on native flora and fauna. During the past seven years, more than 350 individuals from more than 35 developing countries have participated in Wildlife Conservation and Management, and Zoo Biology and Captive Animal Management courses at the Center. The Wildlife Conservation and Management Training course is given for two months each summer at the Center, and at overseas locations three times a year. This year, living quarters were extensively renovated and expanded to accommodate participants from Peru, Brazil, Ecuador, Bolivia, Guatemala, Mexico, Tanzania, Kenya, Liberia, Thailand, Indonesia, and the Philippines. One instructor recently went to Malaysia to help its wildlife department develop independent training and environmental education programs.

Over the past two years, NZP has conducted the Zoo Biology and Captive Animal Management training course for more than 120 mid-level zoo managers in Thailand, Malaysia, Brazil, Guatemala, and China. This program promotes conservation through the urban zoos of tropical countries and receives broad support. The Zoo has received requests for this training program from Morocco, Mexico, Argentina, and Indonesia.

The Zoo recently expanded conservation activities in Southeast Asia by hiring an international conservation officer to work directly with government and nongovernment organizations in Thailand, Malaysia, and Indonesia. This specialist will identify and

address specific conservation training, management, and research needs. With the help of the U.S. Fish and Wildlife Service, Center staff members gave a workshop on microcomputer data management and analysis at the Bombay Natural History Society in India in early 1989. The Zoo recently received a Smithsonian Society grant to develop a worldwide electronic conservation bulletin board using microcomputers. This undertaking will enable a rapid international exchange of information on conservation and research issues among interested parties in both urban areas and remote field locations.

Research - A program of research and development is fundamental to scientific and technological advancement in all NZP program areas but especially to the fields of population and habitat conservation and captive propagation. To this end, the Department of Zoological Research is involved in a number of interrelated pure and applied research initiatives. Among these are the ecological, demographic and genetic assessment of wild and captive animal populations over the long and short term, comparative studies of mating systems in birds and mammals, factors influencing individual reproductive success, and the behavioral and physiological bases of growth and reproduction in a variety of vertebrate species. Subsumed within these initiatives are pre- and postdoctoral level training, collaborations with specialists within and outside the Smithsonian Institution and the integration of research results with the exhibition and education functions of NZP.

The success of NZP programs in conservation and propagation depends largely upon the Zoo's research. The reintroduction of the golden lion tamarins to the forests of Brazil would not have been possible without sophisticated and painstaking research on the structure of the social and family life of tamarins, including their foraging and feeding behavior, diet, metabolism, and genetics. The Zoo's field ecology program in the Poco das Antas Reserve, Brazil, focuses on the mating system, social organization, and communication systems of golden lion tamarins. Studies involve the ecology of associated vertebrates and invertebrates so that scientists can predict how and why the future population might expand. Scientists in Brazil are also planning research efforts in the endangered southeastern coastal rain forest of that country. By developing two new field stations, they can compare the fauna and flora of the different habitats in this nearly destroyed region.

A major new finding resulting from population assessment and surveys of habitat use in a large taxonomic grouping of neotropical migrant birds provides definitive evidence that local habitat degradation can have geographically far-reaching, and possibly global, effects on some vertebrate populations. Zoo research staff, in collaboration with the U.S. Fish and Wildlife Service, has demonstrated that tropical deforestation in Mexico is having a measurably depressing effect on populations of forest dwelling migratory bird species in local neotropical winter ranges and thence on population numbers of summer ranges in North America. The cause and effect relationship is so strong that the FWS Breeding Bird Survey has reported significant declines in North American populations of such once common species as the woodthrush, the redstart and the red-eyed vireo. As yet effects on the ecology of North American forests that may result from habitat disturbances several thousands of miles away are undetermined.

Long-term studies of the vertebrates of the llanos region of Venezuela continue. Researchers focus on the social interaction among troops of howler monkeys when invaded by nontroop males. These invasions often lead to infanticide in mammals, a frequent occurrence whose function is being hotly debated.

Field studies of endangered species are yielding ecological and behavioral data useful for their preservation. Studies of the interaction of kit foxes, coyotes, and red foxes in the protected Carrizo Plain of California are seeking to determine why the number of endangered kit foxes are declining and to develop strategies for their preservation. NZP scientists are also charting the restoration of degraded habitat, studying methods to encourage support for conservation by local communities, testing new techniques to help tamarins survive in the Poco das Antas Reserve, and conducting studies of rare and little known small mammals such as the unique bamboo rat.

Research at the Zoo concentrates on understanding influences on the biology and behavior of animals. One major area of interest is growth. Studies focus on the natural growth patterns of different species to determine the course of development and evolutionary basis for species differences in adult behavior. For example, scientists are conducting studies that show the interaction of inborn behavior with learned behavior. Researchers apply these studies of learning to training adults and young of zoo-born animals for survival in the wild. The Zoo also compares the play patterns of ungulate juveniles to determine if the infant antelope who follows its mother from birth differs from the one who hides during the first weeks of life.

Studies by Zoo staff members have resulted in new understanding of the growth of marine mammals. The Zoo has reference data on the milk composition and concurrent growth and development of several species of seals and sea lions. With these data, scientists can correlate growth rates with ecological and evolutionary factors. Zoo researchers studying the endangered monk seal of Hawaii are examining the fact that female seals nurse other pups besides their own. The competition among the seal pups may result in some animals not receiving enough food to live. This behavior may derive from ecological conditions, and it may be contributing to the decline of monk seals. Future studies will assess whether the degree of fostering varies in different habitats.

A major new research project at the Zoo focuses on genetics. A population genetics study will aid in the long-term viability of zoo populations of critically endangered species. NZP scientists are developing computerized demographic models and long-term breeding plans for zoo populations of tigers, Asian lions, and golden lion tamarins. The Zoo's genetics specialists give advice on many international programs for endangered species, including Bali mynahs, California condors, black-footed ferrets, and tigers.

The use of several new molecular genetics techniques still support the conclusion that the three forms of lion tamarins, though very different in appearance, are almost the same biochemically. Recent studies comparing the lion tamarins with other tamarin species suggest that genetic similarity is specific to them and that other marmoset and tamarin species have more genetic variation. The Zoo is expanding technical expertise and state-of-the-art DNA fingerprinting techniques to document the pedigrees of captive colonies.

An analysis of the genetic variability of two endangered bird species, the Guam rail and the Guam kingfisher, both extinct in the wild due to depredation by an introduced snake, will permit the choice of genetically variable individuals for pairing during a future reintroduction.

Zoo staff members are conducting important new studies on the relationship among mating systems, reproductive behavior, and genetic paternity. Studies of the behavior of purple martins suggest that the young male from this colonial breeding species is

not always the father of the young for which it cares. Similar results for other species of birds and mammals suggest that researchers must re-evaluate current theory concerning kin selection and the evolution of social behavior.

The Zoo continues to make major advances in the study of animal communication. The development of a new heart-rate monitoring technique in birds now allows NZP to evaluate the physiological responses of birds to potentially stressful situations, including social interactions. Initial studies have shown that when stressed, the heart rate of sparrows nearly doubles, to 1,000 beats per minute. Scientists will be able to determine whether the singing of other birds or interaction with other birds during territorial encounters results in a comparable stress level. Studies will also focus on whether the function of singing by tropical songbirds differs fundamentally from singing by temperate climate songbirds. Evidence suggests that the former use song to locate others of the same species and that the latter use song to disturb listeners and transmit distance information. Scientists also are conducting in-depth studies of vocal and long distance communications of the giant pandas and golden lion tamarins as mechanisms for promoting successful breeding and maintaining group isolation and cohesion.

Numerous projects now keep the Zoo's energetics laboratory busy. The successful application of energetic evaluation techniques to studies of mammal breeding strategies has led to an increase in research projects asking energetically related questions.

In recent years the increase in research programs, students, and research associates has strained the dispersed, outdated, and cramped facilities at the Department of Zoological Research. In mid-1988, NZP initiated extensive renovation of the Research Building. When completed, it will provide modern laboratory suites for nutrition, energetics, and video and audio analysis for the growing Department. The Zoo will have improved and enlarged animal holding and office space.

Public Education and Information - A major unifying theme of public and educational programming during 1989 has been reflection on the first 100 years of the National Zoo and its progress during that time. A second theme stressed by educational and public information programs is the urgent need for wildlife and habitat conservation.

The Zoo seeks to inform and educate the large and diverse audience it serves through a wide range of creative programs, exhibits, and materials. The National Zoo News, a newspaper for area teachers, keeps them informed about the Zoo and its many educational offerings, ranging from multi-visit hands-on programs to single-visit programs. Teacher-training workshops represent a key component of school programs. Outreach for schools in the Washington metropolitan area includes loan kits for teachers that feature objects, books, and related curriculum materials. The emphasis in recent years has been on activity-based programs, in which students closely observe animals. A dozen such programs are available, including "Dinosaurs and Living Reptiles," a two-visit program jointly conducted with the National Museum of Natural History; "Invertebrates"; and "Zoo Animals: A Closer Look," a six-visit program for city schoolchildren and their teachers. Symposia instruct high school students in research and conservation.

With its support society, the Friends of the National Zoo, the Zoo offers adult classes in conservation, animal behavior, and exotic animal medicine. Participants

completing six courses receive certificates in wildlife studies. To date, several hundred people have received certificates, and many more have enrolled in the classes.

The Zoo is emphasizing cooperation with other Smithsonian bureaus by creating two joint programs in 1989. With the National Portrait Gallery and the National Museum of Natural History, the Zoo developed and tested the innovative "Bison, Butterflies, and Naturalists," which gives junior high school students an integrated understanding of historical and contemporary problems in conservation. With the National Museum of American History, the Zoo is experimenting to find new forms of informal learning to offer general visitors to the Zoo and the Museum. Methods include theater, demonstrations, hands-on activities and instruments to improve viewing.

The Zoo regularly creates educational exhibits to accompany and explain new animal exhibits. In 1989 and 1990, these will include the new Australia Exhibit and major renovations of the Bat Cave, Elephant House, and Great Flight Cage. Every year the Zoo conducts a program of identification and information labels on a range of subjects as diverse as the Zoo's collection, which change with new animals and new information about them. Other exhibits are also an integral part of the program. "A Walk through History," which draws upon the Zoo's rich photographic archives to depict its first 100 years, will be on display at sites throughout the Zoo during the Centennial year. A program of changing "Science in the Park" exhibits will begin in 1990. In cooperation with the Smithsonian Institution Traveling Exhibition Service (SITES), the Zoo is creating a traveling exhibition "The Good, the Bad, and the Cuddly: Human Perceptions of, and Attitudes toward, Animals." "Zoo Ark," a traveling exhibit created by the National Zoo, continues to circulate under the auspices of SITES, conveying information about zoos and worldwide conservation programs to family audiences throughout the country.

The Zoo's Master Graphics Plan aims at renovating all forms of orientation for the public to draw attention to the Zoo's Centennial, reflect the philosophy of the BioPark, and show major physical changes, especially the redirection and improvement to Olmsted Walk. As the first step, Zoo staff created an entirely new map brochure for all visitors.

Both in Washington, D.C., and across the United States, people share in the achievements of the Zoo through print, television, film, symposia and lectures, and cultural events. Special programs during 1989 highlighted the Zoo's Centennial, especially the opening ceremony on March 2, 1989, which featured First Lady Barbara Bush. In June an unprecedented all-day Community Open House presented behind-the-scenes work at the Zoo, previewed the Smithsonian-Kodak home video on the Zoo, and offered live music and other performances.

Continuing its successful ten-year-old program of public symposia on important zoo-related subjects, the Zoo presented "The History and Future of Zoos." The regular program of lectures sponsored by the Zoo was extended and a special series was sponsored by the Smithsonian Resident Associate Program. The Zoo's Centennial was featured in Smithsonian magazine and in a one-hour "Smithsonian World" program called ZOO.

Through these and many other programs, news and feature stories, publications, and other activities, the Zoo directly focused public attention on issues important to biology, wildlife, and conservation and engaged new audiences to increase public understanding of these topics. In addition, a lively and diverse series of musical

performances at the winter holidays and on summer evenings, continued to reach out to new audiences and acquaint them with the Zoo and its missions.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the National Zoological Park requests an increase of 2 workyears and \$100,000 to support its global change program.

Global Change Program (2 workyears and \$100,000) - Recent evidence of population declines in migratory landbirds in North America are thought to be due directly to the habitat destruction and degradation that has occurred on mainly tropical wintering grounds over the past decades. This massive clearing of forest in Central and South America represents a major "experiment" on the effect of habitat limitation on bird populations. The fact is that we face a "Silent Spring" due to global change and will now study the effects of massive habitat destruction in one area of the globe on animal and plant communities in the United States.

North America is home to over 120 species of breeding landbirds that annually migrate to the tropics to over-winter. These birds not only have immense cultural and recreational value, but they protect temperate forests from damage by reducing populations of defoliating insects. They are part of the complex chains of the North American temperate forests, and the ultimate impact of their loss on North American temperate habitats due to habitat destruction in the southern portion of their range will provide researchers with important information about critical resource requirements of species immediately threatened due to global change. The 120 neotropical migratory bird species will act as sentinels; their fate over the coming decades will give the Zoo staff a foretaste of the impact of wholesale habitat destruction.

In FY 1991 the Zoo proposes to hire an avian ecologist (1 workyear and \$46,000) and a biotechnician (1 workyear and \$29,000) to study the effects of habitat destruction on migratory bird populations. This research will provide important data on methods for mitigating the effect of the massive global alterations. This Zoo staff will examine the little known role of the tropical forests in sustaining migratory bird populations and the effect of the destruction of critical tropical habitats. The research will establish techniques for translocating animals between forest fragments and for rearing and maintaining captive animals in conditions sufficiently similar to those in the wild. The goal of this research program will be the eventual return of animals to the wild.

The Zoo will use the remaining \$25,000 to purchase necessary laboratory supplies for the Genetic Resource Bank. With funding provided in FY 1990 the Zoo has developed a program that will facilitate international efforts to preserve rare and threatened sources of animal biodiversity. The program has three functions: (1) fundamental research in the discipline of low temperature biology and storage of viable biological cells (especially sperm, embryos and tissues but also eventually plants and plant germ plasm); (2) develop and apply new concepts in cryobiology and state-of-the-art techniques of controlled breeding to conservation and propagation of rare animals; and (3) training of intra- and extramural scientists in the application of cryobiological techniques to archival and conservation activities.

This funding for the purchase of routine laboratory supplies for the Genetic Resource Bank will ensure that the Zoo remains in the forefront of research in this area and will permit a controlling influence on systems and materials subject to global change yet crucial to world conservation of biodiversity.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds come from a variety of sources, including allotments and fees for services and general use of the facilities by Trust-fund units or outside organizations. The Zoo uses these funds to support and maintain its facilities, purchase plants and animals for the collection, support a number of three-year assistantship programs, purchase scientific and research equipment, and meet the salary and support costs of the director.

Restricted Funds - Gifts and foundation grants continue to support specific research projects, programs, and the acquisition of animals for exhibit purposes. The Zoo receives outside funding from several foundations and organizations to support the training of zoo professionals from developing nations in wildlife management and zoo management. The Zoo's reintroduction programs continue to receive support from various organizations. On a limited basis, NZP receives funding, usually from private donors, for the purchase of animals for the collection.

Government Grants and Contracts - The Zoo has received funding from various government agencies and departments to support specific research projects. The research staff received a grant from the National Science Foundation (NSF) to study endocrine function in the free-living dwarf mongoose of the Serengeti National Park. A second grant from NSF funded a conference on Research Priorities for Single Species Conservation Biology. Zoo researchers are conducting a study of in vitro fertilization in domestic and nondomestic cat species with a grant from the National Institutes of Child Health and Human Development. A five-year grant from the National Institutes of Health, Division of Research Resources, supports a study on fertility and artificial breeding techniques in rare cats. The research staff is conducting a study of artificial breeding techniques in domestic ferrets with a grant from the U.S. Fish and Wildlife Service. This work with domestic ferrets is a first step to a major research project for the endangered black-footed ferret.

SMITHSONIAN INSTITUTION ARCHIVES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	13	592	6	201	-	24	-	-	-	-
FY 1990 -Estimate	15	613	6	215	-	-	-	-	-	-
-Base	15	626								
FY 1991 Estimate	15	639	6	215	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	15	0	15
11 Personnel Compensation.....	476	11	487
12 Personnel Benefits.....	60	2	62
21 Travel.....	4	0	4
23 Rent, Communications & Utilities.....	9	0	9
24 Printing & Reproduction.....	1	0	1
25 Other Services.....	34	0	34
26 Supplies & Materials.....	22	0	22
31 Equipment.....	20	0	20
Total	626	13	639

Analysis of Increase

Necessary Pay.....	13
Program Funds.....	0

ABSTRACT - The Smithsonian Institution Archives (SIA) is the official repository of Smithsonian Institution records. SIA acquires records of the Institution's work and documentation of American science, technology, and museums and keeps them as evidence of the Smithsonian's past for future research.

Located in the Arts and Industries Building, the facility is convenient to principal users. A records center on North Capitol Street holds inactive records awaiting disposition. Remote storage for records that exceed central storage limits

is in leased space in Springfield, Virginia. Modification of an existing building at the Conservation Research Center, Front Royal, Virginia is underway for security storage of documents.

For FY 1991, the Institution requires \$13,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The Smithsonian Institution Archives acquires, keeps, and services the Institution's historical records. Archives staff members locate documents to assist scholarly studies, and advise the Secretary and principal officers on archives and records management. They coordinate and advise archives work of bureau-based documentation centers throughout the Institution. They also provide advice to other museum archives around the country.

In FY 1989, the Archives began a multi-stage project to conserve deteriorating original architectural drawings of Smithsonian Buildings designated as national historic sites. In addition, the Archives rehuses historical records in alkaline folders and boxes to help retard natural deterioration. The Archives staff also identifies items of high intrinsic value, which are removed from regular files and preserved separately, replacing them with photocopies for general reference use. SIA published a general guide to archival, manuscript, and special collections resources throughout the Institution. Other publications included guides to the records of the Office of the Secretary (Samuel P. Langley) and to animal-related records at the National Zoological Park. SIA copied 3,500 nitrate negatives onto safety film and destroyed the negatives. Another 8,600 negatives in temporary remote storage await copying.

Statistical Summary of SIA Activity

	FY 1987	FY 1988	FY 1989
Total Holdings at Year-end (cubic feet)	13,441	14,393	15,830
Accessions Added (cubic feet)	1,334	1,070	530
Reference Inquiries	1,538	1,610	1,556
Items Provided to Researchers	5,552	6,148	5,625
Pages of Copy Provided Researchers	27,644	28,431	16,134

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Provided by annual allotment, these funds cover the salaries, benefits, and support costs for an archivist and an archives technician. They also support a temporary archives specialist and three program assistants engaged in a photographic collections project and the production of a guide to those collections.

SMITHSONIAN INSTITUTION LIBRARIES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	97	5,150	10	424	-	38	-	1	-	-
FY 1990 -Estimate	106	5,377	11	417	-	2	-	13	-	-
-Base	106	5,463								
FY 1991 Estimate	107	5,571	11	417	-	1	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	106	1	107
11 Personnel Compensation.....	3,295	84	3,379
12 Personnel Benefits.....	713	24	737
21 Travel.....	24	0	24
22 Transportation of Things.....	11	0	11
23 Rent, Communications & Utilities.....	38	0	38
24 Printing & Reproduction.....	114	0	114
25 Other Services.....	609	0	609
26 Supplies & Materials.....	339	0	339
31 Equipment.....	320	0	320
Total	5,463	108	5,571

Analysis of Increase

Necessary Pay.....	108
Program Funds.....	0

ABSTRACT - The Smithsonian Institution Libraries (SIL) serves the Institution and the public by providing information resources and services to support Smithsonian research, curatorial, publication, and administrative activities and participation in the creation of a national bibliographic data base and programs for publications, exhibitions, and interlibrary loans. Its collections of more than one million volumes, including more than 20,000 journals, are available to Smithsonian and outside scholars through a system of 14 branch libraries. SIL purchases books for all Smithsonian organizations and coordinates requests for automated information sources.

These services help to avoid duplication of library-related procedures, materials and expenses within the Institution. The Institution requires \$108,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The Smithsonian Institution Libraries provides both centralized and decentralized services. The central collections support multi-disciplinary research and emphasize interdisciplinary topics such as management, fundraising, conservation, and museology. The specialized collections in the branch libraries are outstanding in natural history, American ethnology and culture, tropical biology, African art, decorative arts and design, astrophysics, the history of science and technology, aeronautics and astronautics, conservation research, and horticulture. SIL's collections include approximately 35,000 rare books, primarily in science, technology, applied art, aerospace, and natural history. The largest of these rare book collections is the Dibner Library, which has 19,000 volumes and manuscripts on the history of science and technology.

The Libraries carries out its responsibilities through three operational divisions: the Research Services Division, charged with direct reference assistance to Smithsonian researchers; the Collections Management Division, responsible for the selection, acquisition, and preservation of library collections; and the Automated Systems Division, which manages SIL bibliographic data bases, catalogues and maintains inventory control of SIL collections, and coordinates all automation of SIL operations. By centralizing acquisitions and cataloguing, preservation and conservation activities, administrative services, and interdisciplinary reference/information services, SIL has achieved system and cost efficiencies.

Research Services - The Research Services Division of the Smithsonian Institution Libraries provides direct library services to its users. SIL collections and services are accessible to users through 14 branch libraries and a service annex. SIL houses the collections in Smithsonian buildings on and off the Mall, including Cambridge, Massachusetts, New York City, and Panama. SIL allocates staff to branches based primarily on the size of the collections and the extent to which Smithsonian staff, visiting scholars and researchers, and the general public use each library. All branches offer sophisticated subject and information science expertise to provide users with the information they require.

In FY 1989, the Research Services Division introduced a revised form for reporting statistics, and correcting anomalies in the collection of data. For example, previous reporting methods counted intralibrary loans twice: first by the branch that loaned a volume to another branch, and second by the latter branch when the volume circulated to a borrower. Since a single volume is involved, that now counts as only one transaction. As a result, for the first time, the following statistics reflect actual transactions. In FY 1989, SIL circulated 23,184 items to borrowers. Locating articles and monographs not held by SIL requires searching both electronic data bases and printed indexes and catalogues. Once located, SIL either borrows the item from another institution or purchases a copy. SIL's participation in national computerized networks facilitates rapid retrieval of the requested item. Upon receipt, SIL then delivers the item to the user. Increasingly, SIL staff rely on commercial document delivery services to make information from professional journals more rapidly available. During FY 1989, SIL borrowed 10,539 items through the Library of Congress, other libraries and document delivery services.

In addition to borrowing items for Smithsonian researchers, SIL lends items to other libraries nationwide. In FY 1989 SIL loaned 4,639 volumes and photocopies from

SIL collections to users in other libraries via interlibrary loan, and 6,585 to users within the Institution.

The Research Services staff also supports research by preparing lists of new acquisitions and bibliographies on specific topics. Bibliographies direct users to new sources of information and are particularly useful in responding to frequently asked questions or for topics of general interest. SIL distributes several hundred bibliographies annually in response to inquiries, especially from the branches at the National Museum of African Art, the National Zoological Park, the Office of Museum Programs, and the Office of Horticulture. Some of these bibliographies, and acquisition lists prepared by these and other branches, are in such demand that SIL regularly sends them to other libraries both in the United States and abroad, to individual scholars, and to interested members of the public.

Reference staff assist researchers daily. In FY 1989, staff members responded to 52,980 reference questions. These ranged from straight forward requests for names, dates, and places to complex questions requiring several hours, if not days, of investigation to answer. To find the information requested, the staff uses a wide variety of reference tools, including standard published reference works and electronic data bases.

The Research Services Division is also responsible for housing and maintaining the collections. In the Museum Reference Center, staff re-organized the vertical files, the Center's most important reference source, for improved accessibility. SIL added new ranges of shelving at the National Zoological Park and at Central Reference and Loan Services to relieve crowding and provide room for expansion of the collections. SIL shifted the entire collection at the Museum Support Center to accommodate the large amount of material returned from the retrospective conversion project. Similarly, retrospective conversion of the Mollusks collection in the National Museum of Natural History branch library entailed rearrangement of the entire collection into the Library of Congress classification order. Support services for the collections housed at Smithsonian Institution Libraries Research Annex, located at 1111 North Capitol Street, continued in order to improve access to those materials.

As the result of an agreement between the SI Libraries and the Anacostia Museum, responsibility for the Museum's library collection transferred to SIL in March 1989. Incorporation of the collection, which consists of approximately 1,500 volumes including serial runs and sets of encyclopedias, into the SIL system will greatly enhance the Museum's research capabilities by giving it access to SIL's personnel recruitment, training, preservation, and automated cataloging services. As part of this transfer of responsibility, the Librarian position approved in the FY 1989 budget for Anacostia has been transferred to SIL. During FY 1989, SIL also expanded its services for the National Museum of Natural History to include the Museum's Naturalist Center.

Collections Management - Staff of the Collections Management Division select, acquire, preserve, and deaccession when necessary, library materials that form the SIL collections, which now contain more than 1,078,935 volumes. In early 1988, the Institution approved the revision of SIL's Collections Management Policies, which serves as a guide for collections acquisition, control, maintenance, and deaccession.

In February 1988, SIL established a program to enhance its ability to preserve non-rare materials. A 1986 preservation survey revealed that nearly one-third of the collections housed outside rare book facilities are too brittle to withstand continued

use. SIL has found volumes published between 1870 and 1930 at particular risk, with more than 90 percent of them severely deteriorated. SIL contracted with a commercial micropublisher to film a 2,000-volume collection of publications from international expositions held between 1834 and 1915. The publisher completed the first unit of 50 reels of film in May 1989. SIL will produce an illustrated guide to accompany the microform collection. In FY 1990, SIL received an increase in funding that will provide for systematic review and treatment of SIL's "brittle books".

With funds provided in FY 1990 SIL will begin hiring library technicians to carry out the brittle books program. SIL will also purchase equipment to access national preservation data bases and to carry out quality control procedures for vendor-produced microfilm. The balance will be used for vendor contracts, supplies, and replacement copies.

The spiraling cost of serials subscriptions forced SIL to cancel further subscriptions as the cost of journal renewals increased by 10 percent. Inflation is particularly acute in foreign journals because of the weakness of the dollar abroad and the rise in rates charged to North American subscribers. Consequently, SIL is unable to place new subscriptions for expensive journals supporting the Smithsonian's new research emphasis relating to global environment issues.

Since June 1988, SIL has administered the Smithsonian International Exchange Service (SIES), which assists nonprofit institutions located in the United States and abroad. The organization sends preaddressed educational materials to interested foreign institutions, often on an exchange basis. In FY 1989, the service handled 78,361 packages. In March 1989, the SIES staff began to use automated mailing equipment, which has streamlined mail-processing routines. The new equipment also provides reports on users and shipments. SIES ships materials to and/or receives materials from 198 countries. SIES is part of SIL's Acquisitions Services, which separately maintains an active exchange program with nearly 3,900 partners worldwide.

Automated Systems - SIL uses electronic technology for most of its internal library operations, bibliographic access to collections by users, and for resource sharing and communication with other libraries.

Since 1974, SIL has participated in the Online Computer Library Center (OCLC), a national bibliographic utility, with almost 10,000 member libraries and a data base approaching 20 million records. SIL uses OCLC for creating and sharing records of its collections and for transmitting on-line interlibrary loan requests.

The Institution's Bibliographic Information System (SIBIS), installed in 1984, is the major mechanism for most SIL functions. It provides an on-line system with a central bibliographic data base. Electronic processing and machine-readable files that SIL can update and access from decentralized locations have replaced manual processes and card catalogues.

For the past eight years, SIL has conducted a program to convert its manual catalogues to machine-readable format. The converted records, which conform to the highest national standards, form the SIL on-line catalogue. Through sophisticated search strategies, such as key word searching, SIL makes information about collections available from any location within the Institution. SIL has completed the basic conversion of standard manual files, with more than 410,633 records added to the data base. The program now concentrates on upgrading and converting partial and

substandard records. SIL will also continue to bar code each volume represented in the on-line catalogue to allow electronic identification and circulation control.

The SIBIS acquisitions module is used for on-line requests, processing of orders, account maintenance, interface with accounting, and on-line access to order information. The system tracks ordered items for expected delivery date and automatically generates a claim notice for overdue items. In FY 1989, SIL also began to create SIBIS records for serial titles received as gifts or exchanges.

SIL continued to implement the SIBIS automated circulation system by installing it in the branches located at the National Zoological Park, the National Air and Space Museum, and in the Central Reference and Loan Service branch. The automated system will track the location and status of items in SIL collections. It also will improve accountability and provide more accurate data about the use of the collections.

In FY 1989, SIL installed upgraded software for the GEAC 9000 Bibliographic Processing System (BPS), which will enhance the on-line cataloguing capabilities and provide on-line authority control. Staff have received training and will test all aspects of the cataloguing module.

During FY 1989, SIL catalogued 29,966 rare, non-rare, trade literature, gift and older, uncatalogued items, both in-house and by contract. SIL added these records to the SIBIS on-line catalogue and to the OCLC data base, which makes them accessible to researchers nationally.

Outreach - In FY 1989, SIL continued its commitment to national and international responsibilities with a program of exhibitions, a lecture, and translated publications. On November 2, 1988, SIL presented a public lecture by Paul Vassallo, Director of the Washington Research Library Consortium, on the Consortium's plans to build a Super-Library in the metropolitan area. SIL's exhibition "Marbled Papers in Books" continued through December 1988. In July 1989, SIL opened "Stratigraphy's Golden Age: Murchison and His Silurian System," an exhibition presented in conjunction with the meeting of the 28th International Geological Congress. SIL published an illustrated brochure to coincide with the exhibition, which opened with a reception cosponsored by the History of Earth Sciences Society. Another exhibition brochure was published to coincide with the "Science and the French Revolution" exhibition that opened early in FY 1990. At the close of 1989, SIL opened an exhibit on preservation of library materials.

With funding from the Special Foreign Currency Program of the Institution, SIL administers the Science Information Program for Translations. This program provides scholars with English translations of scholarly monographs originally published in other languages on topics in the natural sciences and technological history. SIL catalogues the translations in a national bibliographic data base, distributes gratis copies to 180 libraries internationally, and registers the published translations with the National Technical Information Service (NTIS) to ensure their wide and continued availability to scholars. Currently SIL is administering the final stages of editing and production for 18 edited translations. The four works published this year include: Keys to the Insects of the European Part of the U.S.S.R., vol. 5, p. 2; Fauna of the U.S.S.R., Lepidoptera, vol. 4, no. 5 (Clothes Moths/Tineidae) (orig. pub. Leningrad, 1975); Lepidopterous Fauna of the U.S.S.R. and Adjacent Countries (orig. pub. Leningrad, 1973); and Ground Beetles of Fennoscandia, vol. 2 (orig. pub. Goteborg, Sweden, 1945). SIL placed one new order this year, and another 12 books are currently in India and Pakistan for translation.

Facilities - During FY 1989, SIL completed its seven-phase renovation of central administration, central processing, the National Museum of Natural History branch library and Central Reference and Loan Services. The renovation, begun in FY 1982, allows the SIL to make the best use of existing space in the Natural History Building to house the equipment, tools, and increased staff needed for highly sophisticated technical processing and library service. At the Smithsonian Environmental Research Center, SIL relocated to a separate library space with adequate lighting, shelving, and environmental control. The Museum Reference Center moved to new quarters as a result of reorganization within the Office of Museum Programs. Its new location provides additional shelving space for materials and a more rational design of reader and staff areas. The Anthropology Collection received additional space as a result of changes within the department as did the Mollusks location. Finally, the Institution has redesigned the Dibner Library as part of the National Museum of American History mezzanine construction. The Dibner will eventually expand to a new exhibition gallery in the public area.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - An allotment funds administrative salaries and related support costs including travel, training, and supplies. A program allotment supports such special events as public lectures and seminars.

Restricted Funds - Gifts and grants from individuals, foundations, endowments, organizations, and corporations provide these funds for specific purposes. These funds will support the preparation costs for a future publication on international exhibitions and provide for the purchase of rare volumes on the history of science.

INTERNATIONAL ENVIRONMENTAL SCIENCE PROGRAM

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	10	757	-	-	-	-	-	-	-	-
FY 1990 -Estimate	13	770	-	-	-	-	-	-	-	-
-Base	13	778								
FY 1991 Estimate	15	920	-	-	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	13	2	15
11 Personnel Compensation.....	252	92	344
12 Personnel Benefits.....	62	30	92
21 Travel.....	112	0	112
22 Transportation of Things.....	2	0	2
23 Rent, Communications & Utilities.....	21	0	21
24 Printing & Reproduction.....	9	0	9
25 Other Services.....	244	20	264
26 Supplies & Materials.....	47	0	47
31 Equipment.....	29	0	29
Total	778	142	920

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ABSTRACT - The International Environmental Science Program (IESP) is a multi-bureau interdisciplinary effort to coordinate the Smithsonian Institution's long-term monitoring and study of unique and significant ecosystems. The goal of the Program is to evaluate and eventually predict the impact of human activities and natural change on selected ecosystems. Research sponsored by IESP occurs at two permanent Smithsonian sites--the Smithsonian Tropical Research Institute (STRI) in Panama and the Smithsonian Environmental Research Center (SERC) in Edgewater, Maryland--and several non-permanent sites throughout the world. (For FY 1990 and prior years, the

International Environmental Science Program budget line-item appeared in the Special Programs section.)

For FY 1991, IESP requests an increase of 2 workyears and \$134,000 for global change research. The Institution requires \$8,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The International Environmental Science Program sponsors research to meet the urgent need for long-term studies of the world's ecosystems, especially in tropical and subtropical regions where the rapid rate of tropical deforestation, loss of suitable soil, and resulting threat to wildlife are of critical importance. The Program provides funds for teams of scientists to monitor natural variations in specific environments unspoiled by humans. Recent U.S. Government and international commissions have reemphasized the need to expand long-term monitoring activities to gain further insight into biological diversity and the effects of global change.

Scientists maintain permanent IESP research sites at the Rhode River Estuary at Edgewater, Maryland and in the tropical lowland forest of Barro Colorado Island, in Panama and the Galeta Reef on the Atlantic side of the Isthmus of Panama. For more than 15 years, scientists have gathered information for a data base on the biological, physical, and chemical components of these ecosystems. Analyses of these data have produced speculations and verifiable hypotheses about long-term patterns in climate and disturbances resulting from human activity.

Research sponsored by the IESP also takes place at nonpermanent sites on Aldabra in the Seychelles and in Nepal, Egypt, Venezuela, Brazil, Mexico, and the Amazonian regions of Peru and Bolivia. Smithsonian scientists, with support from the host governments, are continuing their efforts at these sites to gather descriptive data that will aid in the development of verifiable hypotheses about climate change, genetic diversity, animal management, and natural area management.

The following highlights IESP's research accomplishments for FY 1989 at the Program's permanent and nonpermanent sites:

Edgewater, Maryland - Scientists have quantitatively documented how forests buffer the adverse effects of agricultural runoff in the Chesapeake region. Traversing these forests are small feeder streams that carry chemical runoff associated with farming in the area. Studies of 50 to 100-foot-wide sections along the streams found that forests transpire, on average, two-thirds the sum of precipitation and groundwater inputs and remove nitrate at a rate of more than 85 percent and sulfate at a rate of 25 percent. Removal of these agricultural chemicals by these forests prevents them from flowing into the Chesapeake Bay and aids in the Bay's preservation.

Scientists at Edgewater also studied the qualitatively different functional roles of headwater forests on small streams and floodplain forests on larger streams in the removal of undesired chemicals. Results show that headwater streamside forests trap primarily coarse particulates stemming from soil erosion, while floodplain forests trap finer particulates rich in phosphorus, a material used in agricultural fertilizers. Also, while headwater forests are more effective at processing shallow groundwater, floodplain forests are most effective at processing surface waters. The combination of forested streamsidess on small feeder streams and forested floodplains on larger streams helps protect the quality of water that flows into the Chesapeake Bay under the complete range of normal conditions.

Estuarine scientists have long sought to understand the mechanism controlling animal populations in bottom-dwelling invertebrate communities. A variety of theories, especially functional-group theories, propose that adults may regulate community composition by affecting the survival or behavior of settling larvae, and this effect differs among adult species. To test this hypothesis, Edgewater scientists studied the influence of two types of clams, *Macoma balthica* and *Mya arenaria*, on bottom-dwelling invertebrates to observe the potential importance of such interactions. Researchers transplanted the two clams at various densities into buckets of defaunated sediment during the spring. Results of this research showed both species had generally similar effects on the density of invertebrates. Both *Macoma balthica* and *Mya arenaria* reduced the total invertebrate population, with the greatest decline occurring at highest clam densities. Although the clams also affected the densities of individual invertebrate species, the two had varied influence among species and between years. Indirect effects of the clams, resulting from their influence on one or two dominant species, may be more important in the short term in determining the population of certain invertebrate communities. While the two clams had differing impacts among species, there was no noticeable variance in total invertebrate population, an outcome that calls functional-group theories into question.

Aldabra - Researchers continued surveys of the flora and fauna of this atoll in the Indian Ocean. The 1989 field season supplemented previous seasons' work and also initiated new projects.

The staff collected about 600 pounds of fossiliferous limestone for processing in the laboratory. These samples include numerous species of extinct birds, predominantly shearwaters and petrels. This collection will supplement the data gathered in 1987 and 1988. On Ile Michel, staff collected a large sample of subfossil land snails. The Natural History Museum at Leiden and the Smithsonian will process the material.

Researchers measured and photographed 55 giant land tortoise skeletons as part of a project, started in 1987, to document the pattern of disarticulation and decomposition of tortoises under dry conditions such as occur on Aldabra. Researchers also collected humeri for a project on aging.

To balance the inventory of marine algae in the Aldabra group, the staff visited previously uncollected sites and gathered several new or rare species. The algal list now includes about 120 species. Staff collected valuable reproductive data on several species of *Gracilaria*, a genus containing several commercially important members.

General collections of insects emphasized herbivorous Heteroptera. Researchers collected between 50 and 100 species of Heteroptera, some of which will probably prove undescribable. They also investigated plant-insect relationships for 30 plant species and obtained detailed information on distribution and ecology for seven species of marine Heteroptera, a useful addition to the knowledge of Indian Ocean zoogeography.

The staff monitored the distribution of sea urchins in seagrass beds, examining the role of heavy rainwater runoff and storm-generated sandy "blowouts" on patterns of distribution and mortality of urchins. Using direct observation as well as gut-content examination, staff members also investigated the predation on urchins by triggerfish. Preliminary results indicate that urchins occur mainly in blowouts where they are less susceptible to salinity and temperature fluctuations. Researchers will

incorporate the results of these investigations into the long-term seagrass ecology study.

In 1990 the program will include investigations at two sites in the granitic Seychelles, to allow for comparative studies in faunistics, floristics, and zoogeography of the islands of the western Indian Ocean. The granitics by their geological nature are very different from Aldabra, are more easily accessible, and the proposed work will supplement the Smithsonian's collections in an area that at present is poorly represented.

Nepal - In FY 1989, IESP supported the transformation of the former Smithsonian Terai Ecology Project field station in Royal Chitwan National Park to a South Asian ecology training center, NECTARI. The project, under the auspices of the King Mahendra Trust for Nature Conservation, pursues training in wildlife conservation and management skills that were introduced by the Smithsonian over the past ten years. The Smithsonian role in NECTARI is part of a collaborative enterprise with the World Wildlife Fund-United States and the U.S. Agency for International Development (USAID). The Smithsonian's share of support for this program will cease in FY 1992, although the Institution will continue to pursue specific projects in Nepal, most notably a program on the demography and reproductive biology of domestic Asian elephants with the support of USAID's Program in Science and Technology Cooperation.

Venezuela - During FY 1989, researchers conducted eight projects at the field site at Hato Masagural, Venezuela. Two projects studied the red howler monkey, a species that inhabits the gallery forest and savannah woodland habitat. The long-term demographic study of 55 social groups of this species involved monthly counts to develop a data base for interhabitat demographic comparisons. These counts allowed researchers to monitor the details of social interactions within groups invaded by adult males. The study of the red howler diet involved detailed field observations of feeding in several social groups and studies of the animals captured last year to determine the total food intake, nutrient content, and digestibility of certain food plants that red howlers eat. Scientists will conduct future tests using several other food plants and more controlled conditions. The research project on the Cebus, the other primate species found within the study area, included two separate investigations. One focused on the relative importance of demography, kinship, and dominance on social interactions within Cebus groups. The other dealt with the behavioral responses of Cebus to the presence of predators in the environment.

Nutritional analysis was an important component of the investigations of the dietary ecology of the Hoatzin, a bird that exploits several kinds of leaves. This investigation provides an opportunity to compare how sympatric species, from unrelated taxa and with different lifestyles and gut morphology, contend with the digestive and nutritional problems of folivory. Another ornithological project continues to monitor the long-term changes in the demography and species composition of two Venezuelan bird communities.

Researchers continue to study the snail kite, an endangered species in the United States. This year's investigations were intended to determine why this highly specialized feeder has diversified its diet in the llanos of Venezuela. The research included diet choice experiments, a study of seasonal changes in food abundance, and nutrient analysis of snail and crab meat. The snail kite investigators also conducted some preliminary studies on the nesting behavior of the parrotlot, a cavity nesting species that adapts well to artificial nests. This study may prove to have important

conservation implications that scientists will develop further during the next fiscal year.

Other studies included investigations on caimans and the local moth fauna. The demographic study of caimans, the most heavily exploited genus of the world's crocodilians, included radiotelemetry and the continued monitoring of nearly 400 individually identifiable animals. This study also provided data on ranging patterns, reproductive biology, and growth rates that are invaluable in developing a plan for the conservation and management of caimans. The investigation of moths dealt with taxonomy, distribution, and the life history of species, especially those of economic importance. Entomologists at the National Museum of Natural History are currently examining and identifying the moth specimens collected in Venezuela. The majority of the research projects in Venezuela also provided scientific training to young Venezuelan biologists.

Brazil: Golden Lion Tamarin Project - The Golden Lion Tamarin Conservation Program continued to break new ground with its unique integration of basic research and conservation in the endangered Atlantic coastal rain forest of Brazil. During FY 1989, scientists continued monitoring the reintroduced golden lion tamarins in and near the Poco das Antas Reserve. By July 1989, 25 reintroduced tamarins remained from the original 67 released between FY 1984 and FY 1988, and 13 young survived from 15 born. The wild population has increased by 38 individuals in 11 groups. Scientists will release an additional ten animals in FY 1990. Moreover, scientists have involved local landowners in the protection of the golden lion tamarin and reintroduced tamarins will be living in remnant forest patches on seven ranches by the end of FY 1989.

Other studies of the behavior and ecology of wild golden lion tamarins continue, and scientists initiated several new studies of the fauna and flora of this endangered habitat in FY 1989. Analyses of habitat characteristics of wild tamarins now permit a description of the type of forest and density of critical resources in habitats golden lion tamarins prefer. An average tamarin family group, for example, has 5.2 members, and in a 0.1 hectare transect of their home range, has 4.3 dens in trees, 9.3 bromeliads, and 0.3 percent swampland. The dens are used for sleeping; the bromeliads contain water and small vertebrates and invertebrates that are prized foods; and the swampland contains preferred fruit trees. Information on habitat permits a more refined approach in choosing new habitats for future reintroductions and allows an analysis of differential mating success in groups relative to the presence of critical resources.

Studies of the density and distribution of small mammals in different habitat types continue. Additionally, scientists have recently trapped and radio tracked the rare and elusive bamboo rat. Researchers hope to chart the life history of this unusual rodent, determining its reproductive rate, mating system, and degree of territoriality. Researchers initiated studies of seed dispersal from different-sized forest plots and the role of bird species in dispersing seed in order to chart the processes of regeneration of tropical forest from pastureland and degraded habitats.

Educators continue to work closely with the local community in the region surrounding the major remnants of golden lion tamarin habitat. They are also training other educators in techniques of promoting a conservation ethic in small communities. In FY 1989, for example, they held another training course for education specialists from Brazilian parks and reserves. Finally, the new headquarters and education center for the Poco das Antas Reserve are now fully functional. Together they establish a

significant center for conservation biology in the critical ecosystem of the Atlantic coastal forest of Brazil.

Brazil: Neotropical Lowland Research Program - In FY 1989, scientists conducted field and laboratory work in archeology, botany, entomology, ichthyology, and herpetology on the Amazonian and Atlantic forest biota. Results of these investigations provided new information on the composition and distribution of the neotropical biota that is important for the completion of several major publications and conservation planning. A highlight of the past year was the publication of Proceedings of a Workshop on Neotropical Distribution Patterns, a 488-page written record of a workshop cosponsored by the Smithsonian Institution and the Academia Brasileira de Ciencias with additional support provided by the National Science Foundation and the Conselho Nacional de Desenvolvimento Cientifico e Tecnologico. The publication includes six papers by Smithsonian participants.

All the individual research projects are long term and will proceed for the next five years. The anticipated addition of new long-term projects in botany and entomology will further strengthen the multi-disciplinary nature of the Program. Toward the end of the next five-year period the Program plans to hold another interdisciplinary, international workshop or symposium.

Panama - IESP-funded research on Barro Colorado Island (BCI) continues to expand understanding of global change and to develop techniques for agroforestry and reforestation. Analysis of accumulated data from physical monitoring indicates an average decrease in rainfall on BCI of eight millimeters per year since 1923, for a total decrease of 20 percent over this time period, a decrease that may result from surrounding deforestation. Hydrographic and Meteorological Studies of a Caribbean Fringing Reef at Punta Galeta, Panama: Hourly and Daily Variations for 1977-1985, by John D. Cubitt et al. (Smithsonian Contributions to the Marine Sciences, no. 32), published by the Smithsonian Institution Press in 1988, represents a summary of the physical monitoring until 1985. A similar summary of BCI data, edited by Donald Windsor, is now in press. As rainfall has declined, average temperature and rates of evapotranspiration have increased. Evidence from the forest irrigation study suggests that some species of trees may now be under considerable water stress during the dry season. Data from the Forest Dynamics Project show that occasional droughts significantly affect the recruitment of young trees into forest populations.

At Galeta, long-term monitoring of reef and mangrove communities continues to provide invaluable background for analyses of the impact of the April 1986 oil spill on these areas. IESP studies are supplemented by a five-year contract from the Minerals Management Service of the Department of the Interior that recognizes IESP's unequalled biological record at Galeta and benefits from its previous monitoring activities. Evidence gathered to date indicates that the effects of oil spills on tropical marine habitats are more severe and long lasting than previously suspected.

Mexico - In FY 1990, IESP continued long-term studies to determine how plant and animal populations recovered from the damage Hurricane Gilbert wrought on a dry tropical forest. FY 1990 results showed that the forest canopy began to recover but that some damaged trees continued to die. The greatest degree of change had occurred in the understory where numerous vines, which survived the hurricane, sprouted and grew rapidly. Soil studies continue to show that few tree species maintained viable seed in the soil before the hurricane. The diversity of birds found in the forest has almost recovered to pre-hurricane levels and the bird community still has many species more typical of open habitats. Only two species of birds that were common before the

hurricane were not present immediately afterward but it is expected that both will return to the site. Huge areas of damaged forest burned during the dry season of FY 1989 but long-term study plots used in this study were only minimally affected.

In FY 1991, scientists will continue adding phosphorus fertilizer to half the long-term study plots to test the hypothesis that phosphorus limits the growth and recovery of dry tropical forests. Investigators will also continue to characterize the recovery of the forest by studying the growth and reproduction of trees, shrubs, and vines; measurements of leaf litter produced by the forest and the nutrient content of the litter; decomposition rates of the massive amount of wood that fell to the forest floor; and recovery of the bird community. Scientists will also sample areas that were burned to determine the impact that fires had on the already damaged forest.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, IESP requests an increase of 2 workyears and \$134,000 for global change research at STRI. The collection of long-term data in tropical environments is increasingly important for understanding global change. Continued support of long-term monitoring programs at STRI will enhance the collection and use of these data.

Physical monitoring of meteorological and hydrological variables is performed at Barro Colorado and the Galeta marine laboratory. Researchers plan expansion of physical monitoring to other sites in the San Blas and Naos Islands and in the Perlas Islands in the Pacific. These studies will enable researchers to understand better how tropical habitats respond to changes in physical parameters such as rainfall, temperature, sea level, and the mix of gases in the atmosphere. Physical monitoring data are used by visiting and staff scientists at STRI and elsewhere, as well as by atmospheric scientists, climatologists, and resource managers studying global climate change. To expand its physical monitoring, IESP requests 1 workyear and \$57,000 to hire an environmental engineer.

IESP began studying various biological species at Barro Colorado Island and Galeta more than 15 years ago. Today, with rapid global change predicted into the 21st century, biological monitoring has become increasingly important. An expanded long-term biological monitoring program will establish a critical baseline and document future biological response to these changes. An increase of \$20,000 will permit an expanded program of biological monitoring at the San Blas station. This monitoring program will replace the data base on natural variation at Galeta that was terminated by the 1986 oil spill. Future plans involve expansion to Pacific habitats for comparison of organisms and communities in the Atlantic and Pacific, unique comparisons that STRI's location on the isthmus make possible.

With the continued and expanded physical and biological monitoring, IESP requires additional personnel and equipment to properly manage and analyze data collected. The physical and biological monitoring data base contains approximately 30 years of combined information collected at the Galeta marine station and on Barro Colorado Island. IESP requests funds to hire a data manager (1 workyear and \$57,000) who will maintain and add to this existing data base. An enhanced data management program will allow IESP scientists to analyze, interpret, and publish data expeditiously. This capability is especially important as the monitoring program expands to the Pacific and San Blas.

While recruitment for the new positions is pending, the Institution will require salary lapse (estimated \$58,000) for purchase of monitoring equipment and an upgraded computer system.

MAJOR SCIENTIFIC INSTRUMENTATION

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	-	836	-	-	-	-	-	-	-	-
FY 1990 -Estimate	-	2,147	-	-	-	-	-	-	-	-
-Base	-	2,147								
FY 1991 Estimate	-	5,765	-	-	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	<u>Base FY 1990</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1991</u>
FTE Allocation.....	0	0	0
21 Travel.....	39	60	99
23 Rent, Communications & Utilities.....	5	0	5
24 Printing & Reproduction.....	3	0	3
25 Other Services.....	1,635	1,845	3,480
26 Supplies & Materials.....	140	1,713	1,853
31 Equipment.....	325	0	325
Total	<u>2,147</u>	<u>3,618</u>	<u>5,765</u>

Analysis of Increase

Necessary Pay.....	0
Program Funds.....	3,618

ABSTRACT - The development of major scientific instrumentation is vital to enable Smithsonian scientists to remain at the forefront of their fields. Because of the magnitude of the costs and the time required to fabricate new instruments and to reconfigure existing ones, the Institution requests funding for such projects under this line-item rather than under individual bureau line-items. Since these projects will, of necessity, require long-term development and multi-year funding, the Institution also requests that funds in this line-item be available until expended.

For FY 1991, the Smithsonian requests no-year funding of \$5,765,000 to continue the development of the submillimeter telescope array (\$3,782,000) and the conversion

of the Multiple Mirror Telescope (\$1,983,000). The FY 1991 request includes the following increases over the FY 1990 level of funding for Major Scientific Instrumentation: an increase of \$2,518,000 for the start of construction of the submillimeter telescope array (over the FY 1990 level of \$1,264,000); and an increase of \$1,100,000 for the conversion of the Multiple Mirror Telescope (over the FY 1990 level of \$883,000). In addition, the Institution asks for an increase in the funding for the personnel costs and rent associated with the submillimeter telescope array as one-year funding in the Smithsonian Astrophysical Observatory (SAO) line-item. However, the justification for those positions is included here because of their relationship to the Major Scientific Instrumentation request.

PROGRAM - The development of major scientific instrumentation, such as telescopes, requires research and development (R&D) over an extended period of time. Teams of Smithsonian scientists, technicians, and contractors, focused on critical telescope elements such as optics, detectors, receivers, and support structures, are engaged in these R&D efforts. To facilitate the unique extended R&D efforts that are integral to the acquisition of major scientific instrumentation, the Institution established this no-year line-item in the FY 1989 budget.

Since FY 1989, the Smithsonian has requested funding under this line-item for two projects for the Smithsonian Astrophysical Observatory:

- the development of an array of submillimeter telescopes;
- the conversion of the Multiple Mirror Telescope.

Both of these forefront scientific projects involve the fabrication of major new instrumentation that will take a number of years to design and complete. SAO anticipates the development of the submillimeter telescope array to continue through the mid-1990s. SAO estimates that the array will require total funding at \$30 million (1987) or \$32.4 million (1989) for construction on a continental site and about 25 percent more on a site in Hawaii. SAO expects to complete the conversion of the Multiple Mirror Telescope by FY 1995. SAO estimates the total cost to the Smithsonian for the conversion will be no more than \$10 million (1987) or \$10.8 million (1989).

EXPLANATION OF PROGRAM INCREASE:

DESIGN AND CONSTRUCTION OF THE SUBMILLIMETER TELESCOPE ARRAY

Scientific Justification - SAO's submillimeter wavelength telescope array will make fundamental contributions to astronomy and astrophysics in several areas:

(1) For studies of star formation, the array offers the prospect of detecting and studying gas falling into very young stars and, thereby, gaining detailed knowledge of how stars are formed. With unprecedented resolution and sensitivity, the array will provide images of high-velocity gas flows from recently formed stars. These images will elucidate the mechanisms that limit the growth of a star and will help answer the fundamental question, Why is the sun the size it is? The array will map the structure and motions of the disks that eventually contract into stars. Scientists will then be able to study the way in which these factors cause multiple star systems and planets to form.

(2) Use of the array will generate new information about galaxies. Detailed maps of the emission from carbon monoxide molecules will provide the first clear view of

the spiral structure of galaxies outlined by giant molecular clouds. The array will also allow astrophysicists to study the emission from the dust surrounding young stars in galaxies. Study of these emissions will reveal centers of star formation not visible with optical telescopes. These two new views of galactic structure will expand understanding of the now mysterious ways that spiral patterns in galaxies originate and sustain themselves.

(3) Because of its high sensitivity, the array will provide accurate measurements of the submillimeter wavelength emission from quasars and active nuclei of galaxies. These measurements will clarify the relationship between these enormously energetic objects and may reveal the source of their energy. These measurements also could be crucial to distinguishing between the mechanisms leading to quasars that emit radio waves and those that do not. An explanation for these mechanisms is one of the most important unsolved enigmas in the quest for understanding the source of energy in quasars.

(4) The array will give new information about the surfaces and atmospheres of planets and other objects in the solar system. Maps of Mercury, Mars, Saturn's rings, and some dozen additional bodies--asteroids and satellites--will reveal the temperature and structure immediately beneath the surface. This information is needed to understand the nature of the subsurface composition. New data gathered on emission from molecules in the atmospheres of Venus and Saturn's satellite Titan should also provide insight into planetary weather.

(5) Finally, the array is likely to make unexpected discoveries. Only a few telescopes will be able to work at submillimeter wavelengths. The array's ability to discriminate spatially will be at least ten times greater than that of any of these other, single, submillimeter telescopes. If the past is any guide, this unique capability should lead to serendipitous discoveries.

The last frontier for ground-based astronomy consists of observing the skies with telescopes sensitive to submillimeter waves, light with wavelengths between those of infrared and radio waves. The radiation from the formation of stars and planetary systems, and from the puzzling processes taking place in the cores of galaxies and quasars, is usually most intense at submillimeter wavelengths. Therefore, scientists can best study such processes at these wavelengths. Only in the past few years has technology advanced sufficiently to allow the construction of telescopes that can observe the universe at submillimeter wavelengths.

In 1982, the ten-year plan of the Astronomy Survey Committee of the National Research Council (NRC) recognized the desirability of submillimeter wavelength observations. Several single-antenna telescopes capable of such observations are now under construction or beginning operation. These telescopes will dramatically advance the field. None of them, however, will be able to discern details finer than about 10 seconds of arc. This limitation means that their resolving power will be less than one-tenth of the leading astronomical instruments in other wavelength regions, including the Very Large Array (VLA) and the Hubble Space Telescope (HST).

The NRC study also recommended development of advanced spatial interferometers at all wavelengths to improve resolving power. SAO's submillimeter wavelength telescope array will be a premier response to the NRC's recommendation. In 1983-84, a committee of seven SAO scientists conceived the proposed interferometric array; they subsequently published a study on the scientific need for the array and its technical feasibility. In particular, SAO scientists recommended an array of six submillimeter

wavelength telescopes. The array would have resolving power of better than 1 second of arc. This resolution is far finer than for any single-antenna submillimeter wavelength telescope and comparable to that of the VLA and the HST.

Astronomers worldwide received SAO's 145-page study, and 25 astronomers with relevant expertise provided detailed reviews. (SAO received about a dozen other unsolicited signed reviews.) The strong consensus of the reviews supported SAO's conclusion that a submillimeter wavelength array has very high scientific potential, is technically feasible, and is of appropriate scale for SAO to undertake.

Status and FY 1991 Plans - SAO began its submillimeter program in FY 1987. In that year, SAO hired a submillimeter receiver scientist and started to equip a receiver laboratory. With funding provided in FY 1988 and FY 1989, SAO continued to develop the laboratory and to increase its expertise in the technology for submillimeter receivers, and hired a receiver leader to direct the laboratory. In 1988, SAO hired a project scientist to oversee the design specifications for the array in the light of its scientific goals. Further, SAO hired a technical leader to coordinate the design and development of the array subsystems. In 1989, SAO added a project director to manage the array program. Progress has been quite substantial. Existing data on atmospheric conditions above Mt. Graham, Arizona, and Mauna Kea, Hawaii, the two sites under consideration for the array, have been analyzed thoroughly and an extensive report completed. Special equipment for the most sophisticated part of the site-testing has been designed and its construction is well under way. Six small studies are also under way in cooperation with industry to identify the best approach for the manufacture and construction of the antennas. An extensive study of the techniques for calibration of the array was undertaken and completed. Further, the receiver laboratory is nearing the test phase on the first prototype submillimeter receiver for the array, and has started design for the second.

Our scientific and technical advisory group for the array, now consisting of 14 experts from other institutions in the United States, Europe, and Japan, met for two days at the Observatory in September 1989 to review our progress and plans. Their comments at the meeting and their 12-page written report were very helpful; overall, their assessment was very positive: "the entire committee is very enthusiastic about the project and impressed with the progress to date."

With the FY 1990 funding, SAO will nearly complete the design phase of the submillimeter array project. Three individuals to be hired in FY 1990 will complete the design team. Collectively, they will concentrate initially on completing the design of the antennas for the array, on the digital electronics associated with the array, and on the software involved with telescope control, data acquisition, and imaging of the celestial objects to be observed with the array.

For FY 1991, the Institution requests a total of \$3,782,000 for the submillimeter array program in the Major Scientific Instrumentation line-item. This represents an increase of \$2,518,000 over the FY 1990 base of \$1,264,000. These funds will be used to complete design and begin the construction phase of the array, in particular to:

(Millions)

Contract for design and construction of first two antennas-----	\$2.6
Equip digital laboratory; develop intermediate frequency transmission system and phase lock distribution system-----	0.5
Develop computer architecture and select suitable system-----	0.1
Start site development-----	0.2
Improve prototype of 345 GHz receiver-----	0.35
Initiate correlator development-----	0.05
Total, FY 1991	<hr/> \$3.8

The SAO line-item of this budget reflects the staffing requirements related to the Submillimeter Telescope Array. With the funding increase requested in its base for FY 1991, SAO will fill 12 new positions (12 workyears and \$746,000) for the project and support the space rental costs for these new positions (\$36,000). The personnel SAO will hire in FY 1991 and their locations are:

Structural Design	
Engineer	- Cambridge
Chief Programmer	- Cambridge
Purchasing Agent	- Cambridge
Digital Engineer	- Cambridge
Secretary	- Cambridge
Receiver Technician	- Cambridge
Research Associate	- Cambridge
Site Manager	- for site, to be temporarily based in Cambridge
Site Engineer	- for site, to be temporarily based in Cambridge
Programmer	- for site, to be temporarily based in Cambridge
Digital Engineer	- for site, to be temporarily based in Cambridge
Electronic Engineer	- for site, to be temporarily based in Cambridge

Project Schedule - SAO will complete the design study early in FY 1991 and then initiate construction. Total costs are as in earlier estimates, about \$30 million (1987) or \$32.4 million (1989), including the design study and SAO personnel costs. SAO estimates annual operating expenses for the array to be about 8 percent of construction costs. The majority of these operating expenses represent personnel costs; SAO will hire almost all of these people during the design and construction phases of the project.

The following chart shows the total level of funding required for the project from FY 1989 through FY 1996, if the array is constructed on a continental site.

PROJECTED FUNDING FOR SUBMILLIMETER TELESCOPE ARRAY
FY 1989 through FY 1996
 (1989 dollars)

	<u>FTE</u>	<u>(\$ Millions)</u> ^{1/2/}
FY 1989	3	0.8
FY 1990	6	1.6
FY 1991	18	4.7
FY 1992	23	7.0
FY 1993	28	6.5
FY 1994	28	5.4
FY 1995	34	5.4
FY 1996	34	1.0 ^{3/}
<u>TOTAL</u>	<u>174^{4/}</u>	<u>32.4</u>

1/ Rounded to the nearest \$100,000; represents 1989 dollars.

2/ Includes all personnel costs for the project.

3/ In addition, \$1.3 million will be required for approximately 6 months' operating expenses.

4/ Represents the cumulative workyear requirement over the eight-year period.

Conclusion - When operational, the SAO submillimeter wavelength telescope array will be a major scientific instrument of international stature. The array will be unique in the world in its combination of wavelength coverage and resolving power. It will measurably enhance the scientific competitiveness of the United States in astronomy. Since astronomical observations from space have suffered severe delays, the construction now of technologically advanced, pioneering ground-based instruments such as the SAO array is especially timely.

CONVERSION OF THE MULTIPLE MIRROR TELESCOPE

In FY 1988, SAO began the process of converting the Multiple Mirror Telescope (MMT) to a telescope with a single 6.5-meter diameter mirror. This conversion will more than double the light-gathering power of the telescope and increase its field of view about 100-fold. The converted telescope will therefore allow scientists to observe many objects simultaneously. For certain types of problems, the converted telescope will permit an approximately 100-fold increase in efficiency of data collection over the MMT.

Scientific Justification - The increased collecting area of the converted telescope will allow astronomers to gather, on objects 2.5 times fainter, data of the same quality as now obtained. This improvement will allow the use of the converted telescope in many new areas of research, where the extreme faintness of the objects involved precludes the use of the present telescope. Further, the added light-gathering power means that more than twice as much of the universe will be accessible for study than is now possible. SAO has already established itself as a world leader through the discovery and study of the "bubble" structure of the universe. Expanding such studies beyond the MMT's present horizon will be very

important in determining if even larger structures exist. If they do, scientists might again have to rethink their understanding of the evolution of the universe.

The expanded capability of the converted telescope also will be especially beneficial for the study of clusters of stars and galaxies. SAO astronomers will be able to complete in a few hours projects that now require many nights on the MMT. For example, SAO scientists will conduct studies of the dynamics of clusters of stars, an area in which SAO scientists have been among the world leaders. Similarly, the study of clusters of galaxies, hitherto prohibitively demanding of telescope time, will become feasible. Research on these clusters may hold the key to understanding the distribution of matter in the universe. This distribution has a fundamental bearing on the evolution of the universe, in particular on how galaxies formed--a question that has baffled scientists for decades.

In addition, the telescope will be able to measure the velocities of gas in very distant galaxies. Astronomers can then compare these velocities, which are often related to the intrinsic brightnesses of the galaxies, with the apparent brightnesses of the galaxies to determine their distances. This technique will allow astronomers to determine the rate of expansion of the universe when it was younger. A measurement of this rate is critical for understanding the evolution and ultimate fate of the universe: Will it continue to expand forever, or will it eventually collapse?

The increased collecting area will allow pioneering studies of certain rapidly changing astrophysical phenomena. In such cases, changes occur too rapidly for astrophysicists to study them with any of today's telescopes. For example, some of these rapidly changing processes take place in double stars. The members of these stars are so close to each other that their surfaces almost touch. Scientists similarly can study phenomena in systems with one star whose core is so dense that not even light can escape from it--a black hole. Such systems give rise to very unusual conditions; their study will be possible with the converted telescope and may permit insights into new physical processes.

These examples provide just a small sample of the scientific justifications for the conversion of the MMT. A conference held at SAO in April 1986 resulted in a 50-page proceeding, which discusses in more detail the various reasons for the conversion.

Status and FY 1991 Plans - With funding provided for the conversion project in FY 1987 through FY 1990, SAO is:

- purchasing the materials required for the casting of the mirror in the University of Arizona Mirror Laboratory;
- contracting with consulting engineers to carry out the preliminary concept and design of the telescope;
- developing the preliminary and detailed design of the primary mirror support and associated thermal control system for the mirror figuring, the cell to support the mirror, the building modifications, and the optics/support structure and telescope drive system.

Progress this past year has been made on a broad front. The glass for the casting has already been purchased, with deliveries to be completed in a few months. The casting itself is currently scheduled for February 1991 at the University of

Arizona's Mirror Laboratory, which successfully cast the third of three 3.5 meter diameter mirrors this past summer. The Mirror Laboratory is now polishing a 1.8 meter diameter mirror, with the technique being developed for use on the larger mirrors, such as the 6.5 meter mirror for the converted MMT. Substantial progress was also made on the design of the thermal control system for the converted telescope, on the means for recoating of the mirror in situ, on the optics-support structure, and on the needed building modifications.

For FY 1991, the Institution requests a total of \$1,983,000 to continue the conversion process. This represents an increase of \$1,100,000 over the FY 1990 level of \$883,000. The main efforts in FY 1991 will be to:

- cast the 6.5-meter primary mirror;
- begin fabrication of the mirror polishing support;
- begin fabrication of the primary mirror cell.

Project Schedule - SAO expects the conversion of the MMT will be completed by FY 1995 at a total cost to the Smithsonian of no more than \$10 million (1987) or \$10.8 million (1989). The exact cost of the conversion and the precise contribution of the University of Arizona are still not known, but the \$10.8 million figure is believed to be a reliable upper bound for the Smithsonian contribution. This total includes amounts allocated in FY 1987 for the purchase of glass and refractories to meet projected requirements for FY 1990 and following years. The funding provided in FY 1988 was part of the one-year appropriation for SAO; since FY 1989, the Smithsonian requested and received funding for the MMT Conversion as no-year funding in this line-item. The breakdown of funds by year is shown in the following chart.

PAST AND PROJECTED FUNDING FOR CONVERSION OF THE
MULTIPLE MIRROR TELESCOPE
FY 1987 through FY 1994
(1989 dollars)

(\$ Millions)^{1/}

FY 1987	0.5
FY 1988	0.5
FY 1989	0.6
FY 1990	0.9
FY 1991	2.0
FY 1992	2.4
FY 1993	2.3
FY 1994	1.6
<hr/>	
TOTAL:	10.8

^{1/} Rounded to the nearest \$100,000.

Conclusion - The conversion of the Multiple Mirror Telescope is the most cost-effective way to ensure that Smithsonian astronomers will remain in the forefront of ground-based optical and infrared astronomy through the remainder of the 20th century and beyond.

MUSEUMS

OFFICE OF THE ASSISTANT SECRETARY FOR MUSEUMS

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	21	1,699	1	282	-	233	1	34	-	10
FY 1990 -Estimate	25	1,231	1	239	-	-	1	173	-	-
-Base	25	1,254								
FY 1991 Estimate	26	1,487	1	253	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	<u>Base FY 1990</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1991</u>
FTE Allocation.....	25	1	26
11 Personnel Compensation.....	938	104	1,042
12 Personnel Benefits.....	168	29	197
21 Travel.....	33	25	58
23 Rent, Communications & Utilities.....	24	2	26
24 Printing & Reproduction.....	10	5	15
25 Other Services.....	51	53	104
26 Supplies & Materials.....	16	5	21
31 Equipment.....	14	10	24
Total	1,254	233	1,487

Analysis of Increase

Necessary Pay.....	133
Program Funds.....	100

ABSTRACT - The Office of the Assistant Secretary for Museums (OASM) provides operational oversight for 12 museums and six major bureaus. It manages essential museum functions, including collections management, exhibitions, education, public orientation, and operations. OASM acts as a liaison with national and international museum organizations and conducts special studies to improve museum operations and methods. This line-item also includes the Office of Museum Programs (OMP) and the Office of the Registrar (OR). The Office of Museum Programs provides training and research services to the museum profession nationally and internationally. The Office

of the Registrar is responsible for the development, oversight, and coordination of the Smithsonian's collections management policies.

For FY 1991, the Institution requests an increase of \$100,000 to explore African-American programming. The Institution requires \$133,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - I. Office of the Assistant Secretary for Museums - With base funding of 10 workyears and \$650,000, the Office oversees the operating and public functions of Smithsonian museums and encourages the development of new techniques in museum administration and practices. The Office administers two Trust-funded programs, the Collections Acquisition Program, which helps with the purchase of major acquisitions by Smithsonian museums, and the Special Exhibition Fund, which provides partial funding for important and innovative exhibitions. The Office is planning the new Experimental Gallery, for the Arts and Industries Building, where new techniques can be tested for presenting information and objects to various types of audiences. The Office also works closely with museums and specialized committees and others to improve programs related to reaching a broader audience; encourages cooperation between Smithsonian and outside museums with common interests; and participates in planning new museum initiatives. In addition, the Office works cooperatively with national and international museum organizations and professionals in the areas of education, exhibitions, and collections management.

II. Office of Museum Programs - With base funding of 12 workyears and \$432,000, the Office of Museum Programs (OMP) provides training and research services to the museum profession nationally and internationally. OMP gives professional focus to the study of museums as cultural phenomena, and of the work which shapes and maintains these institutions. Programs in career counselling, internships, and professional residencies are paired with regular course offerings on ethical, conceptual, and technical topics. National and international colleagues work along with Smithsonian staff members on similar problems, making exchanges of cultural perspectives possible. The Museum Reference Center, a branch of the Smithsonian Institution Libraries supports research and reference in the questions of starting, running, and changing museums. This facility is unique in the United States, providing answers to hundreds of questions from students and museum professionals each year and stimulating new lines of inquiry.

Under the guidance of the Assistant Secretary for Museums, the Office began an intense period of reassessment and redefinition in 1989. OMP adopted new objectives. and was charged to provide leadership in defining conceptual and ethical issues in museology within the broader profession and to provide professional staff development for museum practitioners in the Institution. Curators, designers, educators, conservators, collections managers, security personnel, and administrators at the Institution are now potential students in the training programs of the Office.

The Office gives special emphasis to creating training programs which will encourage greater numbers of Native American and non-western minorities to enter the museum profession. The Minority Awards Program continues to support study at the National Museum for professionals from culturally diverse communities throughout the United States. With funding provided in FY 990, the Office will train Native American museum workers in the techniques of preservation, registration, interpretation and exhibit of relevant museums specimens. This will take the form of seminars, workshops and direct experience of museum procedures in on-site settings. The office will hire a workshop facilitator to coordinate these instructional tasks.

In order to focus its mission as laboratory and discussion center, OMP eliminated former programs in technical assistance, consultation, and audio-visual production and distribution. The construction of a graduated curriculum for entry-level, mid-career, and senior museum professionals has now become the core of the Office's strategic planning. OMP is developing instructional materials and publications within the context of learning objectives for seminars, workshops, and conferences. Once tested in practice at the Institution, they will become available through other national distributors.

During 1989, the Institution also consolidated the responsibility for administering its intern programs, including career counselling, intern placement, orientation to the Institution and to museum careers, and special opportunities for resident research and hands-on learning, within the Office of Museum Programs. A staff group, enlarged by internal reorganization and the transfer of the intern registrar from another office, supports these better-integrated and more coherent services for students.

In 1989, the Museum Reference Center relocated to new, larger, and more accessible quarters. Collecting the ephemera of museum work--sketches of exhibitions, concept proposals, audience studies--began this year. This new aspect of collecting is in response to the emerging mission of this office to serve as a center for museological research as well as a timely reference resource.

III. Office of the Registrar - With base funding of 3 workyears and \$149,000, the Office of the Registrar (OR) designs systems that keep the National Collections safe from harm and permit access by the widest audience possible. The National Collections--a red diamond, a yellow orchid, a Gilbert Stewart painting, Dizzy Gillespie's oddly bent horn--reflect the diversity of American interests. The Smithsonian represents these interests through more than 136 million artifacts and specimens.

Researchers and the public gain access to the National Collections through the Collections Information System (CIS). Staff enters information about objects and specimens into CIS and subsequently uses this information in exhibitions, publications, and public programs. Automation of CIS is a multi-year, interbureau effort organized by OR. This effort identifies appropriate technology, training needs, and resources crucial for effective collections management.

OR designs inventory and internal control procedures to provide accountability for Smithsonian collections. Collections management policy results from interaction between OR and the bureaus. In FY 1988, OR undertook the revision of the Institution's primary collections management policy directive. The Registrar's Council, which includes Collections Management staff from all Smithsonian museums, offers essential staff training and opportunities for the exchange of information. Working with the Office of Museum Programs, OR teaches principles and techniques of collections management to museum colleagues. As a leading participant in the International Council of Museums Documentation Committee, the OR maps the development of collections automation systems worldwide.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the Institution requests an increase of \$100,000 to explore African-American programming.

I. Office of the Assistant Secretary for Museums

African-American Programming (\$100,000) - The Smithsonian seeks to respond more fully to the needs and concerns of the African-American community through increased exhibits, studies, public programs, and other activities in the field of African-American culture not currently offered by the bureaus.

To strengthen this initiative, the Office of the Assistant Secretary for Museums will organize and provide staff to a broadly based advisory committee to advise the Institution on the feasibility of an African-American physical presence either within an existing Smithsonian museum or a new national African-American museum located in the Washington metropolitan area. The Office will also explore collecting issues through symposia and meetings with outside African-American collecting organizations, including traditionally black colleges and universities. Additionally, relationships with African-American museums and cultural centers, as well as organizations such as the Congressional Black Caucus, and the African American Museums Association, will be strengthened through the establishment of an information-exchange network. With these relationships and resources, the Smithsonian will then participate in and make additional contributions to African-American studies.

With funding provided in FY 1990, the Office will hire a director and program assistant to support this initiative. For FY 1991, the Office requests resources to cover the travel and per diem costs of an advisory committee composed of internal and external museum professionals and scholars in African-American art and history. These funds will also support contractual services to establish an information exchange network on African-American holdings, collections management, standards of curation and the production and circulation of traveling exhibits; symposia and meetings to explore collecting issues; and supplies, equipment, services and travel for the director and program assistant.

Working with a variety of African-American organizations, OASM will explore ways to highlight the collection-building and curatorial needs of African-American studies and consider the possibility of a dedicated presence within the Smithsonian museums.

NONAPPROPRIATED SOURCES OF FUNDING:

I. Office of the Assistant Secretary for Museums: Unrestricted General and Special Purpose Funds - Annual allotments provide unrestricted funds from the Smithsonian Institution's unrestricted general Trust funds to support the salary, benefits, and expenses of the Assistant Secretary; expenses for directorship search committees; and Institutional memberships in professional associations. Special purpose funds provide support for the Collections Acquisition Program, which facilitates the purchase of major acquisitions by the Smithsonian museums, and the Special Exhibition Fund, which provides partial funding through a competitive process for important and/or innovative exhibitions throughout the Institution. While the projected expenditures for FY 1990 and FY 1991 appear under this Office, the recipient organizations reflect the actual expenditures for FY 1989.

Restricted Funds - In FY 1989, the Office of the Assistant Secretary for Museums received a grant of \$150,000 from the Rockefeller Foundation for the development of an

Experimental Gallery to study alternative approaches to exhibition design and production.

II. Office of Museum Programs: Unrestricted General and Special Purpose Funds-
The Office of Museum Programs receives an annual allotment for awards to minority professionals attending the OMP workshops. These awards help defray travel and subsistence expenses. In addition, OMP has two revolving Trust funds for training and for the audio-visual loan and sales program to accommodate fees and services.

Restricted Funds - From FY 1982 through FY 1988, the Kellogg Foundation sponsored the Office of Museum Programs' project to "expand the educational influence of museums." The goal of the grant was to establish a network of museums throughout the United States that would examine issues and implementation strategies so that museums could increase their educational impact in their communities. In the course of the grant period, decision-makers from museums and representatives from other educational sources explored all aspects of museum operations. OMP will disseminate the print and nonprint products of the project.

III. Office of the Registrar: Unrestricted General and Special Purpose Funds-
The Office of the Registrar receives an annual allotment to fund salary and support costs for the administrator of the Collections Information System.

NATIONAL MUSEUM OF NATURAL HISTORY/MUSEUM OF MAN

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	537	26,357	3	331	3	1,561	17	2,292	18	915
FY 1990 -Estimate	585	27,505	3	322	3	1,053	17	3,085	10	780
-Base	585	28,098								
FY 1991 Estimate	593	29,762	3	378	4	1,231	17	3,102	10	759

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	585	8	593
11 Personnel Compensation.....	19,446	756	20,202
12 Personnel Benefits.....	3,113	173	3,286
21 Travel.....	502	20	522
22 Transportation of Things.....	74	4	78
23 Rent, Communications & Utilities.....	77	5	82
24 Printing & Reproduction.....	297	0	297
25 Other Services.....	2,855	676	3,531
26 Supplies & Materials.....	966	6	972
31 Equipment.....	758	24	782
Collections Acquisition.....	10	0	10
Total	28,098	1,664	29,762

Analysis of Increase

Necessary Pay.....	605
Program Funds.....	1,059

ABSTRACT - The National Museum of Natural History/Museum of Man (NMNH/MOM) houses the largest and most valuable assemblage of natural history specimens and human artifacts in the world. The Museum staff actively engages in the acquisition, preservation, care, and study of these collections, and makes them accessible to others. Museum scientists and scholars conduct research on living and fossil animals and plants, rocks, minerals, and meteorites. These studies help us understand the evolutionary relationships of animals and plants living today and in earlier periods

and shed light on the great physical changes that take place on our planet through time. Studies of human biology and culture are enriching our knowledge of human cultural and biological adaption and of the history and diversity of human evolution from its early stages to the present. Through its many exhibits, educational programs, and scholarly and popular publications, NMNH/MOM disseminates knowledge about the natural and cultural diversity of the world. Through both internal and external outreach programs, the Museum is deeply involved in science education.

For FY 1991, NMNH/MOM requests 7 workyears and \$1,059,000 to support an associate director for public programs (2 workyears and \$100,000); major exhibit hall renovations (1 workyear and \$700,000); the Amazonia Biological Diversity Program (3 workyears and \$134,000); global change and coastal oceans research (\$50,000); and global change in Arctic ecosystems research (1 workyear and \$75,000). The Institution requires \$605,000 for Necessary Pay for existing staff funded in this line-item. In addition, a request totaling 22 workyears and \$1,250,000, justified in the National Museum of the American Indian line-item, will fund native-American collections documentation research (18 workyears and \$1,000,000) and a special committee on native-American materials (4 workyears and \$250,000) to include existing collections of the Natural History Museum and the Heye collection of the Museum of the American Indian.

PROGRAM - The collections of the National Museum of Natural History/Museum of Man contain more than 119 million specimens of plants, animals, fossils, rocks, minerals, and human cultural artifacts. They are essential to the Nation's scientific community, because they provide fundamental documentation for the study of humankind and of the flora, fauna, and geology of our planet and outer space. The Museum shares its work with the scholarly community through publications, symposia, and scholarly exchanges and with the public through exhibitions, publications, and educational programs. Nearly six and one-half million visitors to the Museum in 1989 are testimony to the success of NMNH/MOM's public programs. These attendance levels make the Museum the most heavily visited natural history museum in the world.

In FY 1989, the Museum increased its holdings by approximately 674,817 specimens. This increase resulted from donations, purchases, expeditions of Museum scientists, and deposits from other government agencies. The Museum is responsible by law to serve as the ultimate repository for the collections of natural history, archeology, and ethnology gathered by U.S. government agencies. In addition, it provides laboratory space and research facilities for more than 50 scientists from affiliated Federal agencies with natural history missions, such as the Department of Agriculture, National Marine Fisheries Service, Fish and Wildlife Service, Geological Survey, and National Institutes of Health.

Worldwide Research - Scientific research on the Museum's collections and the publication of scientific findings are fundamental to the mission of the Museum. As concern about changes in the global environment continue to increase, the Museum is emphasizing programs and projects that will contribute to our understanding of these changes. Some of the Museum's 1989 research activities included:

-- A new impetus to the Museum's biological diversity programs was provided by the transfer in 1989 of the Biological Dynamics of Forest Fragments (BDFF) project from World Wildlife Fund (WWF) to the Smithsonian. With continued WWF support, as well as support from the Mellon Foundation and others, project researchers clarify the effects of deforestation by studying standardized patches of different sizes of isolated forest in Brazil to determine the biological mechanisms that result in

extinction. This research complements the existing work conducted in other areas of Brazil and in Bolivia, Peru, and the Guianas. Expansion will significantly increase the sampling validity of the Museum's biodiversity research in South America.

-- The advent of molecular technology is the most significant new development for systematics research in decades. The Natural History Museum's Laboratory for Molecular Systematics, established in 1988, uses recombinant DNA methods to trace the relationships and evolutionary history of living organisms. As evolution is essentially a process of genetic change and diversification, molecular genetic methods can give direct access to information about evolutionary change. This information provides a powerful new tool for analyzing the relationships between organisms and the mechanics of diversification.

-- Under the leadership of four curators from the Departments of Paleobiology and Anthropology, the Museum is studying the history of global change through the geological record. Research concentrates on the intervals before and after extinctions and before the emergence of human influences. With a data base structure designed in FY 1988, major data acquisition has begun. The Museum's Terrestrial Ecosystems through Time, a late 1990 or early 1991 publication based on the 1987 workshop conference involving many scientists from other institutions, will establish the status and future goals of terrestrial ecosystems research. By FY 1990, ETE will expand its role in this research by engaging in new field and laboratory projects.

-- New dates and discoveries at an early hominid site at Olorgesailie, Kenya, under continuing excavation by a Museum anthropologist, reveal it to be one of the longest and richest records of the mid-Pleistocene, with artifacts and faunal remains dating from 220 thousand to 1.1 million years ago. During the 1989 field season, excavations began to uncover evidence of human prehistoric and historic interactions of humans with their environment.

Conferences and Workshops - The Museum organizes major international symposia to exchange scientific knowledge and ideas. Symposia also provide the public with greater knowledge of important scientific research. In addition, the Museum sponsors training workshops for the scientific community. Some notable 1988-89 gatherings included:

-- "Crossroads of Continents": At a major public symposium marking the opening of the Museum's "Crossroads of Continents" exhibition, leading Soviet and American scholars presented new findings on the archeology, ethnography, folklore, history, and current status of the ancient cultures of the North Pacific.

-- "Frobisher Conference: Vikings and Early Europeans in the Arctic": U.S. and Canadian archeologists, ethnologists, historians, metallurgists, geologists, physicists, and other scholars contributing data to an ongoing study of the oldest English settlement in the New World--Martin Frobisher's 1576-78 base camp on Kodlunarn (white-man's) Island, Frobisher Bay, the Canadian Arctic--met at NMNH/MOM on November 12-13, 1989. Organized by the Museum's Arctic archeologist, the conference discussed recent research findings and developed plans for a multi-year U.S.-Canadian interdisciplinary program exploring the archeology, history, and technology of the Frobisher voyages. A second thrust of the project is to look at the impact of Elizabethan contact on early Inuit culture in Eastern Baffin Island. The team is also planning ecological studies of the impact of the Little Ice Age on Eastern Arctic cultures, animals, and glaciers.

-- Caribbean Mangrove Ecology Workshop: Three dozen scientists participating in the Museum's Twin Cay, Belize, mangrove community study met to discuss findings. This long-term project, involving Smithsonian scientists and colleagues from American and European universities and museums, is documenting the biology, geology, ecological balance, economic importance, and aesthetic value of a mangrove swamp, using the example of a diverse and undisturbed one-square-kilometer swamp community on the barrier reef of Belize, a tiny Central American nation on the Caribbean coast.

-- Forensic Anthropology: Twenty-two forensic anthropologists, medical examiners, and law enforcement personnel from the United States, Canada, and Central America attended a week-long workshop on forensic anthropology, organized by the Museum's Department of Anthropology.

-- "Changing Patterns of Disease and Demography in the Americas before and after 1492": The Museum's third Columbus Quincentenary public forum brought leading international authorities together to discuss current research on human disease experience in the New World before and after the contact period.

Research Publications - A few of the 481 publications completed by Museum staff during 1988-89 included:

- Global Volcanism, 1975-1985: The First Decade of Reports from the Smithsonian Institution's Scientific Event Network (SEAN): Reports from the SEAN Bulletin, a monthly publication of the Museum's Scientific Event Network, survey the decade's full spectrum of volcanism: small eruptions as well as large and subtle warning signs and disasters.
- History of Indian-White Relations, vol. 4 of the Smithsonian's encyclopedic Handbook of North American Indians: Written by leading historians and anthropologists, the book surveys the history of Indian and white relations in North America from colonial times to the present.
- Native Writings in Massachusetts: To compile and write this book, two Museum anthropologists sought out and for the first time systematically transcribed and translated all known documents written by the Indians of southeastern Massachusetts in the Massachusetts language, opening a window onto a segment of the history of colonial Massachusetts previously known only in fragments. The present-day Mashpee and Gay Head communities on Cape Cod and Martha's Vineyard--the principal descendants of the Indians who wrote in this language--have hailed the two-volume work as a major contribution to their cultural patrimony.
- A Field Guide to the Marine Plants of the Caribbean: This guide, the first in its field, was researched and photographed in color by a team of four Museum marine botanists. Designed for both the marine biologist and the amateur skin diver, the guide took eight years to complete and involved oceanographic expeditions from Bermuda to Brazil and the Lesser Antilles to Panama.
- Introduction to the Study of Meiofauna: This is the first book to summarize new advances in knowledge of a group of microscopic invertebrates of key ecological importance living in freshwater and marine sediments. A Museum marine zoologist who is one of the world's top authorities on meiofauna

served as coeditor. Among the 54 essays in the book are contributions by six Museum researchers.

- An Interdisciplinary Bibliography of Freshwater Crayfishes: This book by two Museum researchers brings together for the first time all the scientific literature and popular books and articles dealing with biological aspects of freshwater crayfish--more than 11,000 listings.

Collections Management - The Museum's more than 119 million specimens require continuous care and conservation as well as enhancement through acquisitions. Aided by the Smithsonian's Office of Information Resource Management, the Museum's multi-year effort to convert the collections inventory data base to a modern on-line Collections Reference System (CRefS) is under way. The Museum has transferred approximately 1.5 million collection records from the Departments of Vertebrate Zoology and Botany, permitting faster retrieval of collections information, immediate updating of records, and greater accuracy of data. Conversion of base inventory data in the Departments of Anthropology and Entomology will bring an additional 600,000 records on-line by spring 1990.

NMNH/MOM is continuing plans for an electronic collection image system of the Museum's native-American artifacts. The goal is to provide native-American artifact images to tribal museums and educational institutions throughout the country. The Museum also continues to work on long-range conservation strategies in an effort to improve the physical care of the collections. A department-by-department survey will determine conservation priorities.

Continuing projects in 1989 included moving approximately 418,000 specimens to the Museum Support Center (MSC); cleaning and stabilizing 1,500 collection items to prepare them for the move to the MSC; incorporating 537,000 specimens acquired in 1988 into the collection; and maintaining the loan and exchange programs, the most active of any museum in the world. The Museum loans and exchanges an average of 300,000 items annually.

Notable 1988-89 acquisitions included a collection of 4,000 silver spotted fritillary butterflies collected in Nebraska and eight other Western states, Canada, and Mexico. With many rare specimens, it is one of the finest butterfly collections donated to the Museum in recent years.

The Museum also acquired one of the finest private collections of American coal-age fossils ever amassed. Comprising 2,500 Paleozoic-era specimens of exceptional quality and spectacular size, it includes one-of-a-kind and rare imprints of ancient coal-forest seeds, cones, fern branches with long needlelike leaves, and the scalelike bark of fossilized trees that grew to 100 feet.

Exhibitions - Exhibitions are an important component of the Museum's commitment to communicate research and environmental issues to the public.

In the past year, the Museum has made significant progress in its effort to modernize the Native-American Halls. Museum staff have developed innovative and experimental displays for evaluation, testing, and possible incorporation into new permanent displays. A small theater shows films by and about native Americans; a demonstration area presents live performances and demonstrations of native-American handicrafts throughout the summer; and new displays continue to replace old exhibits. The Museum established a new temporary exhibits space. Physical improvements include

new carpeting, new paint colors, lighting, and graphic enhancements. Planning continues for the creation of new permanent halls on native-American cultures.

In addition, six hall renovations are currently under development as part of the Museum's long-term renovation plan to update its 30 halls. These include:

- Life in the Ancient Seas: The final element of the Museum's new permanent paleontology exhibition complex is scheduled to open in spring 1990. One of the exhibition's highlights will be a huge floor-to-ceiling mural, 121 feet long and 16 feet high--the first of its size and scope ever created--depicting life in the ancient seas, 200 to 500 million years ago.
- Insect Zoo: Since opening ten years ago, the live Insect Zoo has become one of the Museum's most popular exhibits. The Museum has recently completed a new design model, with improved spaces and a recreated tropical rain forest. Following final detailing and engineering, NMNH/MOM hopes to begin construction in 1990 and to open the new hall in 1991.
- Gems, Minerals and Geology: NMNH/MOM intends to rebuild the Geology, Minerals and Gems complex, which houses the best gem and mineral collection of its kind in the world. An innovative new design integrates Earth's spectacular mineral and gem treasures along with geological processes, such as plate tectonics and volcanism, into a single dynamic and educational experience.
- Human Origins: Still in the early days of planning and design, the Museum's Human Origins Hall will present the physical and cultural characteristics that define what it means to be human and the scientific means and analyses by which these determinations are made.
- Marine Mammals Hall: A major renovation of the existing Marine Mammals Hall will feature a new script, graphics, models, and other interpretive materials. The Museum will renovate and reopen a balcony overlooking the spectacular 92-foot model of the now-endangered Blue Whale.

Highlights of 1989 special exhibitions included:

- "Crossroads of Continents: Cultures of Siberia and Alaska": This major international exhibition was on view in the Museum's Thomas M. Evans Gallery for six months in 1988-89. Developed jointly by the Museum and the Soviet Academy of Sciences, with the collaborative aid of the International Research and Exchange Board, the exhibition marked the first time the people of both continents have had the opportunity to view many early and important archeological and ethnographic collections from the remote but important North Pacific region. The exhibition will be seen in five other museums in the United States and Canada, as well as in Moscow, Leningrad, and two additional Soviet cities. NMNH/MOM scholars edited a 360-page catalogue, with contributions from Soviet and American scholars, that was published by the Smithsonian Institution Press. A "Crossroads" school packet and film program accompanied the exhibition.
- "Iroquois Beadwork": This exhibition, on view from March 1989 to September 1, 1989, traced the evolution of the beadwork craft within the changing Iroquois culture from the introduction of glass beads in the 17th

century to the present. The first of a planned series of temporary exhibitions from tribal museums and collections, the exhibition featured representative material from all Iroquois tribes.

- "Nomads: Masters of the Eurasian Steppe": This unprecedented display of artifacts illustrating the lifestyles and cultures of the steppelands' nomadic people over a period of 3,000 years opened in November 1989. Ten years in the making, this international archeological-ethnographic exhibition was organized by the Academy of Sciences of the U.S.S.R. in cooperation with the Natural History Museum of Los Angeles County and featured treasures from nine leading Soviet museums.
- "The First Egyptians": This exhibition, which opened in December 1989, focused on the customs and everyday life of early Egyptian society as it developed between about 4000 B.C. and 2700 B.C.--from small chiefdoms into the world's first nation-state. Organized by the University of South Carolina's McKissick Museum in Columbia it featured more than 130 artifacts, many never before seen in the United States.
- "Flowers from the Royal Gardens of Kew: Two Centuries of Curtis's Botanical Magazine": This exhibition, on view from January 26, 1989 to April 30, 1989, featured 70 watercolors dating from the 18th to 20th centuries by renowned botanical illustrators. Currently on a nationwide tour, it was organized by the Royal Botanical Gardens, Kew (London, England), to celebrate the 200th anniversary of the magazine.
- "Inside Active Volcanoes: Kilauea and Mount St. Helens": This major exhibition on the two active volcanoes in the United States opened at the Museum in July 1989 and attracted more than 500,000 visitors during its three-month stay. Developed by an NMNH/MOM volcanologist in cooperation with a U.S. Geological Survey colleague, it is now traveling nationally to 11 cities under the auspices of the Smithsonian Institution Traveling Exhibition Service (SITES). Featuring spectacular color photo murals and film sequences, the exhibition captured the power and beauty of the eruptions of Kilauea and Mount St. Helens. Touchable geological specimens and numerous interactive computer displays provided visitors with hands-on information about volcanoes and their activity. One highlight was a computer display that presented seismic activity on Hawaii Island as it happened. Linked by telephone to the Hawaii Volcano Observatory computer, the display dramatically showed that the island is one of the most seismically active places on Earth.

As part of the Institution's Columbus Quincentenary Program, the National Museum of Natural History is planning a major exhibition organized around the concept "Seeds of Change." The exhibition, which is set to open in October 1991, will examine plant, animal and disease exchanges that occurred between the Old and New Worlds transforming the cultural and ecological landscape of the Americas.

Education: Relying on nearly 300 docents who volunteer to provide educational services, the Museum's Office of Education produces programs and develops instructional materials to accompany Museum exhibits. Thirty-five thousand school children came to NMNH/MOM for special programs in 1989, while outreach programs taken to local schools reached another 16,000 students. Special facilities include the Discovery Room, a nationally known hands-on facility for children, which welcomed more

than 100,000 visitors last year; the Naturalist Center, where natural history objects, books, and equipment for visitors aged 12 and older are available; and the live Insect Zoo. Nearly 20,000 people attended the Museum's Friday Film and Lecture Series and other special educational programs presented free throughout the year.

Among the special activities in 1989 was a new outreach program to the fast-growing Southeast Asian community in the Washington, D.C., area. It featured traditional music and dance of Vietnam, Laos, Cambodia, and Thailand. In conjunction with the "Crossroads" exhibition, a free film festival showed recent Soviet films on the Siberian people and rare, early footage from Smithsonian and Finnish archives on the people of northern Alaska and Siberia. The first troupe of musicians and dancers from northeastern Siberia ever to appear in the United States presented free programs of music, dance, storytelling, and crafts.

NMNH/MOM has opened "Natural History Update," a large-screen natural history video program for continuous viewing in the Museum. This pilot project, put together by a small in-house staff, features short, up-to-date looks at Museum research and current natural history events to complement traditional museum displays. The objective is to generate public interest in new scientific findings and acquisitions as well as current newsworthy events, such as earthquakes, volcanic eruptions, oil spills, or forest fires. Drawing on still photographs and film clips from news media and filmed interviews with scientists, the videos provide deeper insights into current issues than is possible in television broadcasts. With environmental changes and new research advances influencing the world at an increasing rate, traditional exhibitions, which take years to produce, cannot keep pace. "Natural History Update" is an important adjunct to the educational purpose of the museum display halls.

In conjunction with plans to modernize the Museum's Native-American Halls, the Museum initiated a new series of public programs in July 1989 that bring to the Museum from tribes throughout the United States and Canada the practitioners of traditions such as pottery, storytelling, songs and dances, weaving and basketry, and jewelry-making and silversmithing. These public programs and demonstrations by contemporary native Americans and Alaskans provide a unique opportunity for Museum visitors to interact with representatives of a living cultural heritage.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, NMNH/MOM requests 7 workyears and \$1,059,000 to support an associate director for public programs (2 workyears and \$100,000); major exhibit hall renovations (1 workyear and \$700,000); the Amazonia Biological Diversity Program (3 workyears and \$134,000); global change and coastal oceans research (\$50,000); and global change in Arctic ecosystems research (1 workyear and \$75,000).

Associate Director for Public Programs (2 workyears and \$100,000) - As the most popular natural history museum in the world, NMNH/MOM has a special responsibility to enhance visitors' knowledge of the natural world, the diversity of human culture, and global changes with an emphasis on the ways human activities impinge on natural processes. The goal of coordinating the efforts of the offices of education and exhibits under one associate director is to create a national model for public education in the natural sciences and anthropology that will build on the strengths of the Museum's collections and research interests and the size and diversity of the Museum's audience.

The primary responsibility of this position is to integrate and strengthen NMNH/MOM exhibits and educational programs that will enhance the total visitor

experience. As the Museum moves from static display techniques to interactive exhibits and education, improved coordination of these traditionally parallel efforts is vital. This request will fund an associate director (1 workyear and \$89,000) and secretarial support (1 workyear and \$11,000). Base resources will fund travel and other support requirements.

NMNH/MOM's more than six million visitors each year come from around the world, as well as from local schools and colleges. By hiring a senior manager to coordinate public program efforts, the Museum will meet the needs of its wide-ranging constituency more efficiently.

Major Exhibit Hall Renovation (1 workyear and \$700,000) - NMNH/MOM's 30 permanent exhibit halls comprise more than 200,000 square feet of exhibit space. As most of these halls are more than 20 years old, they present outdated cultural interpretation and scientific information to the public. The Museum is committed to bringing the exhibits up to date, to making NMNH/MOM a leader among U.S. and world museums, and to addressing the serious challenges of science education.

The increase will enable the NMNH/MOM to continue work on the Fourth Generation of Exhibits--a long-term renovation plan for its 30 permanent halls that will prepare for the 21st century. The staff and funds provided by this request will allow continuous upgrading, renovation, and maintenance services to assure the quality and improve the appearance of exhibits and public spaces, as well as the care and conservation of the National Collections on display, and the safety and comfort of more than six million visitors a year.

Existing salary and expenses resources and repair and restoration limits will not permit timely renovation of major exhibit halls. Ideally, the renovation should occur at an average rate of one and one-half halls per year, at an estimated mean cost of \$4.0 million per hall. The ultimate goal is to renovate all the exhibit halls in NMNH/MOM. The following are the components of a typical budget for a hall measuring approximately 10,000 square feet in size: design costs, \$750,000; demolition, \$75,000; mechanical and safety, including electrical and sprinkler equipment, \$185,000; walls, ceiling, and lighting, \$250,000; exhibit casework, case lighting, headers, and panels, \$1,800,000; casework installation, \$270,000; installation of graphic elements, brackets, dioramas, specimens and artifacts, \$325,000; audiovisual and installation, \$185,000; carpet and installation, \$60,000; and publicity and public programming, \$100,000. The Museum schedules exhibit construction, whenever possible, in concert with repair and restoration, major capital renewal, and Museum Support Center move activities.

Careful planning is essential for exhibit renovation, often requiring scheduling several years in advance for demolition, object selection and preparation, and installation. Because of the magnitude of the costs involved in exhibit revitalization and the requirement of multi-year planning, the Museum requests that this funding (\$700,000) for major hall renovation remain available until expended (unlike the balance of the salaries and expenses appropriation for this line-item, which are one-year funds). The "Introduction" section of this budget contains a further justification for no-year funding.

For FY 1991, requested funds include support for one conservator (1 workyear and \$46,000) and support costs that, combined with private funds, will help renovate one major exhibit hall per year. The Museum will begin renovation of the Native-American

Hall and rebuilding of the Insect Zoo, Marine Mammals Hall balcony, and the Geology, Minerals and Gems Hall.

The modernized halls of the National Museum of Natural History/Museum of Man will display to millions of visitors landscapes and seascapes, living and extinct organisms, and the human cultures of the Earth. The Museum strives to complete its hall renovation in order that its visitors might better understand the beauties and complexities of the living planet.

Amazonia Biological Diversity Program (3 workyears and \$134,000) - The loss of tropical rainforests and concomitant biodiversity is a threat to all humankind, particularly as it relates to hastening global warming and other changes. Addressing these urgent and ultimate problems must not be delayed, no matter how modest the initial effort. Tropical forests, especially in Brazil, are being destroyed by development at an alarming rate, and it is in the interest of the United States and the world community to help prevent this destruction.

The Institution seeks increased funding for the Museum's Amazonia Biological Diversity Program to assume administrative responsibilities for the Biological Dynamics of Forest Fragments (BDFF) Project transferred to the Smithsonian Institution in FY 1989 from World Wildlife Fund with short-term interim funding. Augmenting the Smithsonian's long-term studies of biodiversity, the project is critical to future conservation planning in Amazonia. The Amazonian rain forests maintain global climate cycles. The forests are a significant reservoir of carbon, which, if released into the atmosphere, will aggravate the greenhouse effect. Rainfall patterns, and hence agriculture, throughout South America depend upon moisture derived from the rain forest.

BDFF studies the changes that occur in the rain forest ecosystem as human development encroaches upon it. Researchers inventory the flora and fauna in a series of isolated forest reserves. Scientists measure the physical changes in the understory microclimate and soil moisture. Biotic and physical changes are then related to the size of the forest reserve under study. Resulting analyses will provide guidelines for the integration of conservation and economic development.

Graduate students and researchers from various Brazilian institutes, including Brazil's National Institute for Amazonian Research (INPA) as well as Smithsonian and other foreign researchers are involved in the project. The training of Brazilian graduate students is vital for establishing a cadre of nationals capable of designing development strategies that ensure maximum conservation of biological diversity.

The Museum requests funds to support a senior scientist (1 workyear and \$76,000) to provide scientific direction and coordination for all the Museum's biological diversity programs in Amazonia, including BDFF and the Biological Diversity of Tropical Latin America Program (BIOLAT). A program administrator (1 workyear and \$32,000) will manage BDFF, and a secretary (1 workyear and \$24,000) will support biodiversity staff at the Museum. Support funds of \$2,000 will offset increased communications costs.

It is certain that the pressure to develop the extensive rain forests of South America will continue to grow. It is also clear that we currently do not have sufficient data to make wise decisions about development. Data gathered by BDFF and the biologists trained under its auspices should interact synergistically to guide

this development in such a way as to minimize the potentially devastating global changes that would result from poorly planned occupation of the Amazon.

Global Change and Coastal Oceans Research (\$50,000) - The Smithsonian pursues basic research in environmental change in coastal ecosystems at a number of Institution sites. Among NMNH/MOM sites is the extremely important station at Carrie Bow Cay, Belize. Here the Caribbean Coral Reef Ecosystems Program, begun in FY 1985, has experienced resounding success in field and laboratory studies of Caribbean coral reef and related ecological systems. Including staff from the National Museum of Natural History/Museum of Man and scientific investigators from around the world, the small scientific station at Carrie Bow Cay has played host to 70 scientists and technicians annually.

The Museum seeks funding of \$20,000 to establish a weather station located on the Belize Barrier Reef. Technicians will observe climatic and ocean conditions using 12 measurements including wind speed, wind direction, air temperature, solar radiation, water level, surface water temperature, and rainfall. NMNH/MOM seeks to document changes over the long term in the climate and ocean and the impact of these changes and catastrophic events, such as hurricanes, on the animal and plant populations in the Caribbean reef ecosystems. Such local changes linked to changes in rainfall and temperature globally, are integral to analyzing the greenhouse and global-warming trends. The scientists who have conducted studies of biological communities of the reef and mangrove since 1972 will design and monitor this weather station.

In addition to equipment costs, the Museum seeks funding of \$10,000 to cover travel costs for a specialist to install the weather station and for a growing number of fellows and scientists conducting field research at Carrie Bow Cay. In addition, the research program requires that the Museum lease the field site for an additional three months (\$20,000) to complete a full year. In subsequent years, this program will need related technical contracts for maintenance and data evaluation, as well as support for replacement parts and equipment.

As a result of long-term experience in the region, NMNH/MOM is uniquely suited for monitoring this key environment. The weather station will allow real-time transmission of the data to a computer on Carrie Bow Cay. Monitoring and recording of sensor data at all times will therefore be possible. Ongoing studies of biodiversity, food chain ecology, nutrient cycling, ecophysiology, and habitat mapping using satellite imagery will be improved by the availability of data from the weather station.

Global Change in Arctic Ecosystems Research (1 workyear and \$75,000)- Archeological sites are, in effect, time capsules that contain records of former cultural and environmental conditions. Owing to exceptional preservation, Arctic and sub-Arctic archeological sites can yield important data on the impact of long-term climatic change on natural, biological, and cultural systems.

Climate exerts dominant control over the southern position of Arctic icepack, the position of the forest-tundra boundary, and the distribution of many species of plants and animals. Human cultures adapted to these extreme environments and their animals and plants appear to be similarly affected by climate, as positive correlation between climatic records and latitudinal shifts in the Eskimo-Indian boundary in Labrador demonstrates. More generally, correlation of archeological data with paleoenvironmental history provides a powerful tool for determining long-term impacts of global climatic change on human societies.

This research on Arctic ecosystems concentrates on two aspects of global change. In the climatically rigorous Eastern Arctic, researchers will look for signals of climatic and environmental change in cultural and demographic-territorial change of Indian and Eskimo cultures over the past 10,000 years. In the Western Arctic, researchers will place emphasis on social and technological factors of change seen through the dynamic interaction of Alaskan and Siberian cultures. The results of both studies will be linked with research results from other circumpolar areas to develop a general model of circumpolar cultural response to changing global environments.

The requested funding will support a Western Arctic archeologist (1 workyear and \$46,000). Support funds (\$29,000) will permit travel, fieldwork, and laboratory research needed to conduct archeological and ecological studies in the Eastern Arctic and Sub-Arctic.

The Smithsonian has a long history of archeological and environmental studies in both the Eastern and Western Arctic. Its Arctic Program is part of an international network of northern research centers, and its vast collections, archives, and educational programs, including major international exhibitions like "Crossroads of Continents," provide important resources for research, communication, and the training of future northern scholars.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - The Museum derives funds from a variety of sources. These funds represent the Museum's share of net proceeds of the museum shop, cafeterias, vending machines, and other receipts, such as sale of educational posters and folios; royalties from staff publications through the Smithsonian Institution Press; and tuition reimbursement grants by universities for courses taught by Museum staff members. During FY 1989, allotments provided for the costs of the Museum director and a support staff member, half-time administrative support for the Marine Systems Laboratory, a computer statistician to support Museum researchers, and events related to new exhibit openings.

The Museum uses special purpose funds to support special research publications, field research, Museum internships and fellowships, travel and supplemental training for support staff, collections acquisition, NMNH/MOM brochures and audio-visual equipment for exhibit halls, and other needs of the Museum's various departments. The Museum's Naturalist Center and Discovery Room also receive support for educational supplies, specimens, furnishings, and related materials.

NMNH/MOM benefits from the Institution's programs for Collections Acquisition, Scholarly Studies, Educational Outreach, Research Opportunities, the Women's Committee of the Smithsonian Associates, Smithsonian Society, International Exchange, and Special Exhibition funding initiatives for research, education, and exhibit projects. Funding for FY 1989 has provided wider audience participation initiatives, production of a Kiowa catalogue, research for the Human Origins Hall, support for the Columbus Quincentenary exhibition "Seeds of Change," and the design for a new Insect Zoo.

Restricted Funds - The Museum receives additional funding for specific programs and projects through endowments, donations, gifts, grants, and contracts from individuals, foundations, and corporations. Sources of this type of funding include ARCO Gas and Oil Company, Earthwatch, and Exxon Corporation. In combination with the generosity of private individuals, these resources allow for the pursuit of many long-term and short-term research projects and exhibits. One example of this type of

funding is gifts from members of the American Mining Congress, totaling more than \$700,000, for the renovation of the Geology, Minerals and Gem Hall. Xerox Corporation has pledged \$1.2 million for production of the Museum's Quincentenary exhibit, "Seeds of Change." Another example is support from Space Biospheres Venture (SBV) for the Marine Systems Laboratory Biosphere Project, which aims to provide food sources and a livable human habitat to sustain life during space travel through the development of seven major ecosystems. The prototype for this project is presently in the construction stages in Tucson, Arizona. The Hitachi Foundation has provided support for "Natural History Update," the new video program featuring current natural history events.

During FY 1989 Museum staff members conducted a variety of projects with restricted funds, including ethnographic research of Tobelorese communities of Indonesia, study of Arenal Volcano in Costa Rica, and investigation of powder X-ray diffraction of manganese oxide materials. These are but a few examples of activities carried out in the Museum and at field sites around the world.

NMNH/MOM is responsible for the management of the Smithsonian Marine Research Station at Link Port (SMSLP), Fort Pierce, Florida. Hunterdon Endowment funds are dedicated to the basic operation support of this oceanographic research facility, the research of one resident scientist, and supporting research activities of Smithsonian visiting scientists from NMNH/MOM and the Smithsonian Environmental Research Center, postdoctoral fellows, and numerous visiting investigators, both national and international. Research focuses on the life history, systematics, and ecology of a wide spectrum of plant and animal marine life. Seward Johnson Endowment funds provide for the support of the Johnson-Sea-Link submersible owned by the Harbor Branch Oceanographic Institution (HBOI), the host facility.

NMNH/MOM is currently developing a fund-raising strategy to support construction of a laboratory and residential facilities that will serve the mission of SMSLP and its research initiatives. Since the Museum's involvement with the SMSLP, its location has proven to be a growing source of study for virtually all scientific disciplines. These considerations, along with the advent of long-term lease agreements between the Smithsonian and HBOI, have made this major step forward possible.

Government Grants and Contracts - These funds are provided by various government agencies and departments for special projects conducted at the Museum to take advantage of its unique scientific expertise and variety of specialty fields. Examples of this type of activity are analysis of polar biological materials and cooperative systematics studies by the Smithsonian Oceanographic Sorting Center (SOSC) for the National Science Foundation; biosystematic research on Aedes mosquitoes conducted for the U.S. Army by an entomologist located at the Museum Support Center; and tumor registry in lower animals conducted by the Department of Invertebrate Zoology for the National Institutes of Health. Other agencies currently contracted with NMNH/MOM departments are the National Air and Space Administration, the U.S. Information Agency, the Department of Agriculture, the Department of Interior, and the National Oceanic and Atmospheric Administration.

NATIONAL AIR AND SPACE MUSEUM

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	224	9,594	3	414	45	4,701	2	2,297	4	316
FY 1990 -Estimate -Base	227 227	10,165 10,387	3	251	46	4,412	3	1,557	5	304
FY 1991 Estimate	228	10,698	3	249	46	4,594	4	1,666	4	242

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	<u>Base FY 1990</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1991</u>
FTE Allocation.....	227	1	228
11 Personnel Compensation.....	6,760	227	6,987
12 Personnel Benefits.....	1,690	59	1,749
21 Travel.....	69	10	79
22 Transportation of Things.....	35	0	35
23 Rent, Communications & Utilities.....	44	0	44
24 Printing & Reproduction.....	127	0	127
25 Other Services.....	662	15	677
26 Supplies & Materials.....	503	0	503
31 Equipment.....	497	0	497
Total	<u>10,387</u>	<u>311</u>	<u>10,698</u>

Analysis of Increase

Necessary Pay.....	240
Program Funds.....	71

ABSTRACT - The National Air and Space Museum (NASM) is an international repository for artifacts and documentation related to the development of aviation, space flight, and space science. Through its exhibitions, research, collections management, and education programs, the Museum serves a wide public and scholarly community interested in the history and technological achievements of aviation and space flight. In addition to its Mall location, NASM maintains a facility for the preservation and restoration of artifacts at the Paul E. Garber Preservation, Restoration, and Storage Facility in Suitland, Maryland.

For FY 1991, NASM requests an increase of 1 workyear and \$71,000 to reinforce the Museum's capabilities in applying the technology of satellite data analysis to global-scale environmental studies. The Institution requires \$240,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - Legislation established NASM on August 12, 1946. The completion of the Mall Museum in 1976 greatly strengthened NASM's role as a national resource for public and scholarly interest in the history of air and space technology. More than 126 million people have visited the Museum since it opened, making it the most popular museum in the world. NASM's collections include more than 300 historic aircraft, 250 spacecraft, and extensive holdings of artifacts, papers, photographs, films, microfiche, video disc, and technical drawings. These resources are available for interested American and foreign scholars to study.

The exhibition program uses state-of-the-art techniques in design, presentation, and equipment to convey the excitement of the subject matter to the visitor. Active scientific research programs, aimed at understanding astrophysics and both terrestrial and planetary geology, are important endeavors of the Museum. Ongoing programs in historical research, collections management, preservation, and restoration of artifacts are central to the Museum's curatorial efforts. As a public institution, NASM devotes considerable attention to education and outreach activities, offering workshops, lectures, films, planetarium presentations, docent tours, and written materials to schools and visitors to the Museum.

NASM handles exhibits preparation, collections storage and maintenance, preservation, and restoration at the Paul E. Garber Facility in Suitland, Maryland. At the Garber Facility, the Museum has restored more than 69 historic aircraft and spacecraft from its collection, with the restoration of additional artifacts planned each year. The Garber Facility also displays approximately 90 aircraft, numerous spacecraft, and other flight-related objects. In FY 1989 almost 33,000 people visited the Garber Facility.

Research - Research is the foundation of the Museum's efforts as a primary resource center for the science and technology of aviation, space, and geophysical science. Research findings also support the exhibitions and publications and educational, historic restoration, and archival programs. Research undertaken by the Museum staff encompasses the history of aeronautics; the history of space science and exploration; contemporary developments in these fields; comparative studies of the Earth and other planets using satellite images and data; and infrared astronomy. In addition, the Museum engages in two applied research and development programs: the historic preservation of aircraft and spacecraft, and the storage and retrieval of archival and photographic information.

-- Aeronautics: With funding provided in FY 1989, the Museum will hire two senior-level curators/historians for the Aeronautics Department. These two new positions represent the first phase of a multi-year program to enhance the Museum's ongoing historical research efforts and eliminate current gaps in staff expertise specifically in the area of high speed flight. This enhancement will build upon the Department's recent efforts to conduct more comprehensive research on the history of aeronautics and its role in the broader context of United States and world history.

NASM has entered a cooperative venture with the Smithsonian Institution Press to publish the Smithsonian History of Aviation series. Through this program, the Museum and the Smithsonian Institution Press intend to attract the highest quality

manuscripts produced by scholars working with the Institution. In FY 1990, the Smithsonian History of Aviation series issued significant scholastic works on aviation history, such as Strike from the Sky: The History of Battlefield Air Attack, 1911-1945, by Richard Hallion, and Bonfires to Beacons: Federal Civil Aviation Policy Under the Air Commerce Act, 1926-1938, by Nick Komons. Additional publications in this series for FY 1990 will include Visions of a Flying Machine: The Wright Brothers and the Process of Invention, by Peter Jakab. Future publications will include translations of From the History of Soviet Aviation: The Aircraft of S. V. Ilyushin's Experimental Design Bureau, edited by G. K. Novozhilov, The Airplane in American Culture, edited by Dominic Pisano, World War I Airpower, by John Morrow, and Benjamin O. Davis, Jr., an autobiography by General Davis. In November 1989, the University of Washington Press published the catalogue accompanying NASM's centennial exhibit on Igor Sikorsky.

Other publications planned for FY 1990 include The Boeing 247, by Robert van der Linden. Research and writing continue on several books to appear in upcoming years. These include a publication exploring the history of the development of the small gas turbine engine in the United States, a historical perspective of the civil pilot training program during Franklin D. Roosevelt's presidency, and a history of blacks in aviation.

-- Space History: The Museum's joint program of research and documentation of the Hubble Space Telescope project, in collaboration with the History of Science Department at Johns Hopkins University, will serve as a rich source of research material for future historians and will provide a valuable current record of space technology. Cambridge University Press published The Space Telescope: A Study of NASA, Science, Technology and Politics, a monograph by Dr. Robert Smith on this project, in October 1989. Other publications in FY 1990 include A Directory of Sources for Air and Space History: Primary Historical Collections in United States Repositories, a preliminary edition by E. T. Wooldridge, Jr., original compiler, and Martin J. Collins, general editor; Space Technology and Planetary Astronomy by Joseph Tatarewicz; and A Spacefaring Nation, proceedings from the NASA/NASM seminar on space history, edited by Martin J. Collins and Sylvia Fries. The Space History Department is also conducting historical research on satellites, the interaction of aerospace and computing technologies, spacesuit technology, weather satellites, and the Soviet space program.

The Glennan-Webb-Seamans Project continues its preservation and research program on the history of the Nation's space program, with emphasis on its administration and management. In FY 1989, the Project conducted oral history interviews with key administrators and program managers from the National Aeronautics and Space Administration (NASA) and aerospace industry executives and managers. In FY 1990, the Project plans to sponsor several research case studies on the interaction between government and the aerospace industry in implementing the space program.

Preparation of an in-depth survey of Washington-area resources for space history, in cooperation with NASA and the U.S. Air Force History Office, continues in FY 1990. The success of the various oral history projects, which NASM began in FY 1986, has stimulated interest in experimenting with video histories and led to Sloan Foundation's funding of a pilot video history program. During the first two years, the Museum conducted video history sessions on a wide range of topics. These include the origins of the aerial reconnaissance studies at the Rand Corporation, the history of X-ray astronomy and aeronomy at the Naval Research Laboratory, aspects of the history of the Mariner Venus program, and observing techniques in ground-based

astronomy. NASM continues to coordinate this Institution-wide video history project for Sloan Foundation, in cooperation with scholars from the National Museum of American History and has expanded new proposals to include the history of Soviet space biology and black aviation.

-- Earth and Planetary Studies: NASM established the Center for Earth and Planetary Studies (CEPS) in 1973. By analyzing remote-sensing data from satellites, the Center's scholars research comparative planetology and the development of the Earth's landforms and surface composition. In FY 1983, NASA designated the Center for Earth and Planetary Studies as a Planetary Image Facility, a repository allowing researchers access to the collections of images of the planets taken by NASA space probes. Researchers from the Smithsonian and other institutions make extensive use of this facility. Plans are now under way to link the Planetary Image Facilities across the country. Using this computer network, each facility can share the images in its collection with other facilities that store images and information from different space missions.

Research projects on satellite remote-sensing of desert fringe regions have increased scientists' understanding of the effects of climatic change on surface materials in Africa's Sahelian zone. The Center for Earth and Planetary Studies has also conducted fieldwork in the inland Niger Delta of Mali, western Egypt, and northern Sudan. By combining recent satellite images with those taken 14 years earlier, researchers can better assess the movement of sand and soil that has taken place as a result of the recent drought. CEPS continued research in mapping and analyzing surface features on the Moon and Mars throughout FY 1989 with funding by NASA. CEPS is also a partner in a NASA proposal for a major quantitative study, based on Landsat and other remote-sensing satellites, of the extent and rate of deforestation in the Amazon basin.

In FY 1990, the Center for Earth and Planetary Studies will move to a new location in the Museum. This increased office space, formerly the public cafeteria, will enable the Center to house additional staff, interns, fellows, graduate students, and the Center's mainframe computers currently located on another floor.

-- Laboratory for Astrophysics: NASM opened the Laboratory for Astrophysics in October 1988. Staff scientists of this new department will initially concentrate on the development and application of state-of-the-art technology for infrared astronomical spectroscopy, including instrumentation aboard the European Infrared Satellite Observatory. They will carry out research on planetary atmospheres, star formation, galactic shock phenomena, and other astrophysical processes. This new department has many interests in common with the Smithsonian Astrophysical Observatory. In addition, it will lend scientific insight and expertise to support the Museum's curatorial staff in communicating to the public an up-to-date scientific understanding of the universe.

Exhibitions - A new exhibition, "Beyond the Limits: Flight Enters the Computer Age," opened in May 1989. This major gallery traces the development and use of computers in aviation and aerospace industries from the 1940s and includes hands-on displays, interactive video units, a state-of-the-art theater, and a working robotic arm. The exhibit highlights seven areas to illustrate the primary applications of the computer in aerospace: Design, Aerodynamics, Computer-Aided Manufacture, Flight Testing, Air Operations, Flight Simulators, and Space Operations. A full-scale model of the radical X-29 aircraft with its forward-swept wings is on exhibit, along with spectacular video footage of the aircraft in flight. The exhibition also features a

CRAY-1, one of the first production-model supercomputers, and a robot that builds and flies paper airplanes.

Other exhibit openings in FY 1989 included the Structural Dynamic Test Vehicle for the Hubble Space Telescope, the largest astronomical space telescope ever built. The Museum's art gallery opened an exhibit of Italian futurist artwork in June 1989. "Aeropittura Futurista: Images of Flight in Italian Art from 1913 to 1942" depicted Italian futurism, the first artistic movement to embrace technology as its subject and to glorify the airplane as a symbol of the modern age. In July 1989, the Museum commemorated the 20th anniversary of the first lunar landing with a lunar landing party including complete video coverage of this historic event and an art exhibition, "Eyewitness to Apollo 11." The exhibition included 26 works of art and traced the development of the Apollo program and its crowning accomplishment--the Apollo 11 mission--through the eyes of artists as diverse in style and approach as Robert Rauschenberg and Norman Rockwell.

In FY 1990, the Museum opened an exhibit commemorating the centennial of Igor Sikorsky's birth. Illustrating benchmarks in his life as a pioneer designer and industrialist, this exhibit concentrates on Sikorsky's designs for aircraft, seaplanes, and helicopters. The Museum remodeled the Sea-Air Operations gallery in FY 1990 to expand the Ready Room and to offer a new film of aircraft carrier deck takeoffs and landings. This gallery highlights the six major aircraft carrier battles in the Pacific during World War II, with special tribute to the USS Enterprise, the most decorated carrier of the Pacific war. "Commuting in the Modern Manner," a new exhibit centering around the fully restored Grumman Goose, highlights the use of this amphibious aircraft during the 1930s.

The Museum's visitor information center will open in FY 1990. A highlight of the center is an interactive series of six satellite units, stationed throughout the Museum, which will provide visitors with current information on all Smithsonian museums, plus detailed information on all NASM galleries, films, and presentations. A prototype unit has been part of the Museum since FY 1989. Also in FY 1990, the Museum is presenting the work of artist Roland Emert, including drawings of his unique and whimsical sculptures, such as the Pussiewillow II.

In FY 1991, a major new gallery entitled "Embattled Skies: The Emergence of Air Power in World War I," will open. Emphasizing the first-time use of aircraft as a weapon in war, this gallery will highlight the grim realities of aerial combat in contrast to the romanticized myth of "knights of the air."

For FY 1992, the Museum is planning "Where Next, Columbus?" an exhibition in conjunction with the Columbus Quincentenary that will examine prospects for discovering other "new worlds" in space during the next 500 years of exploration. Other planned topics include the roles of manned and unmanned space missions; long-term exploration of the solar system; alternatives to the chemical rocket using advanced propulsion concepts; astrophysical and physiological limits to space flight; and life support systems.

NASM presents films related to aviation and space flight in a specially equipped theater that uses an innovative, high-resolution projection system (IMAX) and a giant screen for extraordinarily realistic effects. The latest IMAX film, On the Wing, which premiered in June 1986, compares natural and artificial flight using a mechanical replica of the flying reptile, pterodactyl. Another IMAX film, The Dream Is Alive, features film footage shot by the astronauts on three shuttle missions. A

new film project planned for FY 1990, entitled The Blue Planet, will use new IMAX film footage shot by the astronauts on recent and forthcoming shuttle missions to explain the functioning of global environmental systems. In recognition of the International Space Year 1992, the Museum will coproduce another IMAX film, To the Stars, highlighting achievements in space exploration by different countries. A new show in the Museum's planetarium, "Calling All Stars," takes viewers on a voyage to other worlds to explore current scientific thinking on the question of extraterrestrial life and the prospects for radio communication with other civilizations in space.

Development of Collections - In FY 1989, the Museum acquired a Lockheed C-130 Hercules, a typical combat cargo carrier used in Vietnam; a McDonnell-Douglas F4S Phantom II, a Navy carrier and U.S. Air Force standard fighter used in Vietnam; a Rolls-Royce Conway turbojet engine, a pioneer jet engine used on Boeing 707s and Douglas DC-8s; a blimp gondola from a K-ship of the type used during World War II; and a Goodyear ZPG-3W airship gondola from one of the last lighter-than-air ships created for the U.S. Navy ca. 1950. In July 1989, the Museum and Air France finalized an agreement to add a Concorde airplane, the first commercial supersonic transport plane, to the Museum's collections after the airline retires it from commercial service.

In FY 1989, other important acquisitions included an antisatellite missile and pylon; a payload assist module; ordnance rockets and launchers; and a model of the "National Aero-Space Plane." Planned acquisitions for FY 1990 include a Pershing 2 missile (with a second one that the Museum hopes to trade for a Soviet SS-20 missile); an AQM-81A drone; an H-1 launch vehicle model; an H-2 launch vehicle model; and a MIDAS Infrared detector.

To date, NASM has acquired 31,000 feet of duplicate footage of original aviation newsreels produced by the Movietone News Company from 1919 to 1939. These cover subjects such as Charles Lindbergh and his Lockheed Sirius, the Spirit of St. Louis arriving at the Smithsonian Institution, Jack Northrop and the original flying wing, the Women's Air Derby of the late 1920s, a Graf Zeppelin over Berlin, and Amelia Earhart speaking to American women fliers. This extremely valuable footage (part of the collection of 800,000 feet of Movietone newsreel film on aviation currently owned by the University of South Carolina) is on nitrate film. Under the terms of an agreement signed with the university in FY 1986, NASM will retain a master negative and a duplicate positive film copy of any nitrate film footage transferred to safety film and return a positive copy to the University for its collection. The goal is to save all of this historically valuable material for future generations.

NASM is cooperating with England's Imperial War Museum to develop the collections of the American Aviation Building at Duxford Air Field in Cambridge. The Keeper of the War Museum and other staff from Duxford have visited NASM, and the museums have agreed to exchange minor collections.

Preservation and Restoration of the Collections - In FY 1989, NASM completed restoration of the German Arado 234, the first jet bomber; the ATS-6 applications satellite; an HS-293 glide bomb, a German World War II missile; the Mariner 10 structural/thermal engineering model; the Hughes Racer, a mid-1930s technological masterpiece for aircraft speed and design; the Hubble Space Telescope model; and the Mercury 14 capsule. Restoration will continue in FY 1990 on the rear fuselage of the B-29 bomber Enola Gay; the Japanese Aichi-Serian, a submarine-borne seaplane bomber designed for the sole purpose of bombing the Panama Canal during World War II; and a French Voisin, a World War I reconnaissance aircraft used for bombing. Restoration will begin in FY 1990 on the Sopwith Snipe, the ultimate Sopwith fighter design; a

Fokker D VII, the most highly regarded German fighter aircraft of World War I; the Herring Curtiss, an early aircraft of the Curtiss pusher variety, significant in the development of flight control systems; the Hawker Hurricane, an early World War II British fighter famous during the Battle of Britain; and a B-29 engine. Planned FY 1991 restoration projects include the first wing of the Enola Gay; the Apollo 11 lunar command module; the (Horten) Gotha GO229, a technologically significant attempt by the Germans to develop a flying wing as a jet fighter interceptor; and a Shoemaker Canonhouse, a pre-World War I aircraft featuring a unique flight control system; a Titan rocket engine; and the Mercury 14 capsule. The treatment program, initiated in FY 1983 to reduce further deterioration of aircraft not yet restored, remains at the heart of the restoration activities.

-- Video Disc Project: This preservation program for archival photographs and other visual collections consists of photographing the images on 35mm film and then transferring this film onto video disc format. The project has transferred more than 825,000 images and completed six discs. By facilitating greater access to the collection and eliminating the loss or destruction of the originals, this project has expanded the availability of these vast collections to scholars throughout the world. The sixth disc, completed in FY 1989, contains images from all the U.S. lunar missions (Ranger, Surveyor, and Apollo), including photographs of rock and soil samples. The seventh disc, currently in production, will focus on photographs in the Museum's collections of rockets, missiles, manned space missions, aeronautical artifacts, and engines, as well as a valuable collection of images from the Deutsches Museum of Germany. NASM is now soliciting ideas for disc eight, which the Museum will produce in FY 1991 and FY 1992. Collections under consideration include the Wright Field aeronautical collection and planetary images. The program shares its technical expertise with other offices throughout the Institution.

As part of a previous reorganization, the Museum established a new Collections Management Division. One major goal of this new Division is to gain better physical and intellectual control over its document and audio-visual collections by implementing a formal archival program. With funding provided in FY 1989, the Museum has begun to reinforce its support for various collections management efforts. They include locating, surveying, and describing the vast archival collection; acquiring equipment and materials necessary to initiate the Museum's conservation program; purchasing equipment for participation in the Institution-wide automated Collections Information System (CIS); and converting the film collection to a long shelf-life format.

Public Education and Orientation - The Museum's educational programs continue to serve an expanded national and international audience. The Education Resource Center (ERC), modeled after NASA's Teacher Resource Centers, opened in January 1988. It provides slides, video tapes, photographs, software, and written materials to educators on aerospace-related topics. To date, more than 4,670 teachers have visited the Center. In FY 1989, the Museum's education department held numerous workshops for in-service and graduate credit for teachers. Topics included weather, astronomy, living in space, the space shuttle, and manned space flights. The Center will repeat the most popular workshops in FY 1990. In FY 1989, the education department completed curriculum materials for "Beyond the Limits: Flight Enters the Computer Age," "Fragile Earth," "Exploring Space," and "Weather or Not." In FY 1990, planned curriculum materials include "Exploring Planets," "The Blue Planet," and an update to "Looking at Earth."

In summer 1989, with a grant from the Smithsonian Educational Outreach program, the Museum conducted four one-week workshops for students 8-14 years of age throughout the District of Columbia. The workshops, developed in cooperation with the Anacostia Museum, allowed the participants to visit NASM, the Anacostia Museum, and the Goddard Space Flight Center to launch their own handmade rockets.

The Museum also received a grant from the Association of Science and Technology Centers to train teachers from the District of Columbia in developing educational materials for their classrooms. Forty of the 94 members of the Museum's Regional Resource Program participated in the August 1989 meeting, receiving updated briefings from Museum staff on the Museum's collections, research, restoration, and education programs.

The Museum began a new educational outreach program in FY 1988 aimed at minority students in the local community. This program provides speakers and educational materials directly to the classrooms of elementary and middle schools. It is popular with the local community and will continue throughout FY 1990 and beyond.

The Museum launched Air and Space/Smithsonian magazine in FY 1986 as a bimonthly educational and informative publication addressing broad issues on aviation and space flight for the public. With more than 311,000 subscribers, Air and Space/Smithsonian has become a highly regarded source for up-to-date information on aeronautics and astronautics for the general public.

NASM continues to present numerous free lectures, seminars, symposia, and films to the public. The General Electric Aviation Lecture series for FY 1990 features Brig. Gen. Charles E. Yeager (USAF Ret.); Ralph Lightfoot, who worked with Igor Sikorsky in developing flying boats and helicopters; Air-Vice Marshal Ronald Dick (RAF) on transitioning from piston-powered aircraft to jets; and Group Capt. Peter Squire (RAF) on air war in the Falklands conflict. At the 13th annual Von Braun Memorial Lecture in January 1990, Gen. Bernard Schriever (USAF Ret.) spoke on the civilian military relationship in the space program. Najeeb Halaby, former administrator of the Federal Aviation Administration and past president of Pan American World Airways, will present the Charles A. Lindbergh Memorial Lecture.

Other highlights in FY 1990 include the International Conference on Aerospace History, which will consider topics such as "Manned vs. Unmanned Flight," "The Aviator and Astronaut as Icon," and "Problems in Writing the History of Technology." Also in FY 1990, a 14-part series of lectures and panel discussions on "The Legacy of Strategic Bombing" will examine the origins, practice, and consequences of strategic bombing, from its earliest premonitions before World War I, through its most intense employment during World War II, and up to its influence on the development of today's strategic nuclear arsenals. Guest speakers include Philip Morrison, Max Hastings, Freeman Dyson, Kurt Vonnegut, Curtis LeMay, R. V. Jones, Lewis F. Powell, John Kenneth Galbraith, Paul H. Nitze, Lord Solly Zuckerman, Bernard A. Schriever, McGeorge Bundy, and other experts in the field.

The Museum's Albert Einstein Planetarium will host the Tenth International Planetarium Director's Conference in September 1990. Planetarium directors from around the world will meet in Washington and also visit planetaria in New York, Philadelphia, and Richmond.

The Monthly Sky Lecture series continues in FY 1990 with the theme "The Contrast of Orderly and Chaotic Structures in the Universe." The film series continues its

popular movies in FY 1990, including Twelve O'Clock High, Slaughterhouse Five, Dr. Strangelove, On the Beach, and War Games.

In August 1988, a new public cafeteria and restaurant began serving visitors to the Air and Space Museum. In a new glass-canopied addition to the building, this facility has expanded seating capacity and greatly improved access over the original third-floor cafeteria. Museum visitors have the option of cafeteria service at the "Flight Line" or full-service meals at the "Wright Place." From its August 1988 opening through September 1989, more than 1,885,450 patrons dined at these new facilities.

Publications - In FY 1989, the Museum published Beyond the Limits: Flight Enters the Computer Age, by Paul Ceruzzi, to accompany the new exhibit gallery of the same title. In FY 1990, the Museum will publish The Boeing 247, by Robert van der Linden; Visions of a Flying Machine: The Wright Brothers and the Process of Invention, by Peter Jakab; United States Women in Aviation, 1940-1985, by Deborah Douglas; Weather from Above: America's Meteorological Satellites, by Janice Hill; and a new edition of The Jet Age: The First 50 Years, edited by Walter Boyne, Donald Lopez, and Ron Dick. Future publications include Suiting Up for Space: A History of U.S. Space Suits, by Lillian Kozloski; The First Golden Age of Rocketry: Congreve and Hale Rockets of the Nineteenth Century, by Frank Winter; Science with a Vengeance: Origins of Space Science in the V-2 Era, by David De Vorkin; Commuter Airlines of the United States, by Ronald E. G. Davies and I. E. Quastler; Caring for the Collections of the National Air and Space Museum, by Lin Ezell; and A Catalog of the Art Collection of the National Air and Space Museum, by Mary Henderson.

EXPLANATION OF PROGRAM INCREASE:

For FY 1991, NASM requests an increase of 1 workyear and \$71,000 to reinforce the Museum's capabilities in applying the technology of satellite data analysis to global-scale environmental studies. Air and spacecraft provide vital observational platforms for monitoring global environmental consequences of human activity, such as desertification, deforestation, and soil erosion, as well as climate change and the decline of stratospheric ozone. Scientists in the Museum's Center for Earth and Planetary Studies (CEPS) apply the experience and techniques they have gained from planetary studies in various remote-sensing investigations of terrestrial deserts to analyze changes in our planet. With funding provided in FY 1990, NASM will hire a computer analyst and a remote-sensing technician to reinforce the application of remote-sensing analysis to global-scale environmental studies.

In addition, CEPS needs the expertise of an atmospheric scientist to make the atmospheric corrections necessary to interpret remote-sensing data. This specialist will interpret the surface geological record in arid regions and direct studies of natural and manmade climate changes. The scientist will also contribute to the development of Museum exhibits on global climate change and related environmental problems.

The requested increase will allow the Museum to hire a remote-sensing scientist (1 workyear and \$46,000), to acquire the relevant satellite data (\$15,000), and to pay support costs (\$10,000) including travel expenses associated with presenting research at conferences and staying informed of the latest developments in the field. This position will reinforce CEPS current staff expertise in applying the technology of satellite data analysis to develop a deeper understanding of our environment.

Global change that will impact on the future of all life on Earth is presenting increasingly critical and difficult questions for this generation. To address these questions, NASM and CEPS can apply their expertise in planetary studies to analyze changes in our planet. A remote-sensing scientist will interpret climatic factors for environments as diverse as deserts and tropical forests to address these issues.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds come from a variety of sources, including the Museum's share of the net proceeds from the museum shops and restaurants, a share of the net proceeds resulting from bureau activities (such as the theater and planetarium), and small allotments. In addition to meeting expenses of the theater and planetarium, these funds finance fellowships, research chairs, guest lecturers, symposia, and special events. A portion of the proceeds from the theater and planetarium provide particular support for the production of new IMAX films, including The Blue Planet and To the Stars, as well as other planetarium shows and Museum programs. For example, in March 1989, Calling All Stars premiered in the Albert Einstein Planetarium. The show traces efforts to locate life in the Universe. The Museum also received corporate support for these new films. The Lindbergh Chair of Aerospace History and the International Fellowship provide continuing support for distinguished scholars to study at the Museum. Other fellowship programs include Guggenheim, Verville, and Martin Marietta internships, which support predoctoral and postdoctoral students, and minority students, and distinguished scholars in aviation and space science.

Restricted Funds - Funds provided are in the form of restricted endowments that specify the use of donations or bequests and of gifts and foundation grants by individuals, organizations, or corporations for specific purposes. Examples of these funds are the Ramsey Endowment, for research relating to naval flight history; the Guggenheim Endowment, for lectures and stipends; and the NASM Education Fund. The Sloan Foundation provided grants beginning in FY 1987 for a four-year video history program as well as a workshop, video disc, and curriculum package on aviation history. NASM received numerous corporate donations, both monetary and in kind, to support the gallery "Beyond the Limits: Flight Enters the Computer Age" in FY 1987, FY 1988, and FY 1989, and will receive further corporate donations in FY 1990. The Glennan-Webb-Seamans Fund for Research in Space History received additional funds in FY 1989 from corporate sources.

Federal Grants and Contracts - Various agencies and departments provide funds for special projects conducted at NASM because of the Museum's expertise in a given area. Continued funding from the National Aeronautics and Space Administration grant program supports research activity in planetary geology by the Museum's Center for Earth and Planetary Studies; specifically, photogeologic investigation of planetary tectonic features, the structural geology of the Basalt Plains of Washington State, and the Planetary Image Facility. The research project on satellite remote sensing of central Mali, which began in FY 1984, continues to determine the long-term effects of climate change on the fragile environment of the inland Niger Delta region. This research expanded to cover fringe areas of the world's deserts and has received continued financial support. Partial funding from NASA supported the Space Telescope Historical project, a joint effort between NASM and Johns Hopkins University, and resulted in a monograph published in October 1989. The Laboratory for Astrophysics has received funding from NASA for continued research in the field of infrared astronomy. The Education Resource Center receives support from NASA and other agencies.

NATIONAL MUSEUM OF AMERICAN HISTORY

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	330	14,446	3	152	9	1,519	3	2,710	-	15
FY 1990 -Estimate	347	15,218	2	184	9	368	2	1,796	-	-
-Base	347	15,570								
FY 1991 Estimate	348	16,024	1	131	9	340	2	1,773	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	<u>Base FY 1990</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1991</u>
FTE Allocation.....	347	1	348
11 Personnel Compensation.....	11,395	325	11,720
12 Personnel Benefits.....	1,936	66	2,002
21 Travel.....	152	10	162
22 Transportation of Things.....	54	0	54
23 Rent, Communications & Utilities.....	79	0	79
24 Printing & Reproduction.....	105	33	138
25 Other Services.....	1,081	0	1,081
26 Supplies & Materials.....	374	0	374
31 Equipment.....	325	0	325
Collections Acquisition.....	69	20	89
Total	<u>15,570</u>	<u>454</u>	<u>16,024</u>

Analysis of Increase

Necessary Pay.....	359
Program Funds.....	95

ABSTRACT - The National Museum of American History (NMAH) houses the National Collections that represent the political, cultural, scientific, and technological development of the United States. The Museum devotes itself to preserving the national heritage by improving and conserving its collections and interpreting these materials for the public and scholarly community. Through exhibitions, research publications, and an array of lectures, symposia, concerts, tours and demonstrations, and film and broadcast features, NMAH presents the unique cultural and scientific

heritage of the United States to more than six million visitors per year. In addition to the Mall building, the Museum maintains the exhibition "1876 Centennial," located in the Arts and Industries Building, and cares for collections stored and exhibited at six buildings in Suitland, Maryland, and one building in Springfield, Virginia.

For FY 1991, the National Museum of American History requests an increase of 1 workyear and \$95,000 to continue the development of programs and exhibits to commemorate the Columbus Quincentenary. The Institution requires \$359,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The National Museum of American History possesses the largest and most comprehensive collection of its kind in the world. Covering a wide spectrum of materials, sizes, and descriptions, its holdings comprise 16 million stamps, one million numismatics specimens, and more than two million objects including railroad trains, automobiles, textiles, photographs, paintings, sculpture, paper materials, clothing and costumes, tools, power machinery, clocks, weapons, ceramics and glass, musical instruments, and scientific instruments of all kinds.

Collections Management - The Museum's goal is to preserve and protect this irreplaceable "history book of objects" through a strong collections management program that includes proper storage, conservation, registration, and archival functions.

-- Master Space Plan: The Museum's Master Space Plan is a long-term, multi-million dollar program that integrates the retrofitting of the American History Building's climate and safety systems with the redesign and reinstallation of the Museum's exhibition halls. During FY 1989, Phase I work proceeded on four floors of the Museum, including exhibit, storage, and office spaces. Staff cleaned, packed, recorded, and moved several thousand objects to off-site storage in Springfield, Virginia, as well as to other locations within NMAH.

-- On the Mall: In FY 1989, the Museum continued an active acquisition and loan program and relocated thousands of objects under the Museum's Master Space Plan. More than 17,000 objects came into the permanent collections, while the Museum loaned or borrowed 3,932 objects for exhibition or study. The Collections Management Steering Committee guided efforts to complete old accessions through Accountability Plans that establish priority targets and schedules. Staff began to use a newly designed, automated Local Collections Information System for tracking locations and doing new acquisitions, loans, and basic cataloguing. The Museum conducted a comprehensive internal study of its major functions as part of planning for the Smithsonian's Collections Information System. Staff continued to organize and make early collection files more accessible for research and accountability.

-- Off-site Storage: During FY 1989 and FY 1990, the Museum has continued the program begun in FY 1985 to clean collections of asbestos and make them accessible for exhibits, research, or loan. Staff placed sensitive collections from other Suitland buildings and from the Mall into modern storage cabinets in newly renovated Building 19 in Suitland, Maryland. The Museum upgraded security and storage in warehouse space at the Fullerton Industrial Park in Springfield, Virginia, and began sending collections there.

-- Museum Support Center: Since FY 1987, the Museum has been planning for the transfer of collections from several of its curatorial divisions to the Museum Support

Center (MSC) in FY 1991 and beyond. During FY 1989, NMAH staff prepared and packed 4,000 objects at Suitland, Maryland for eventual transfer to the MSC.

Collections Acquisition - In FY 1989, the Museum received many significant objects through purchases and gifts. The acquisitions of the Department of the History of Science and Technology included: three pioneering medical diagnostic instruments in the field of fiber optics; an experimental robot from the National Bureau of Standards; Digital Equipment Corporation's PDP-1, the first true minicomputer; the Xerox Alto, the source of many ideas for the Apple Macintosh computer; International Business Machines' SCAMP, the company's first microcomputer and one of the first personal computers; a spyglass made for the Signal Corps of the Confederate Army, early 1860s; and a terrestrial globe designed by Ellen Liza Fitz of Boston in 1878.

The Department of Social and Cultural History accessioned 21 outstanding occupational portraits documenting 19th-century trades; a toast rack made by Andrew Warner in the mid-1800s that is a fine example of a rare form of American domestic silver; the Larry Zimmerman Fair and Exhibition Collection of 5,000 items documenting world fairs; a collection of more than 100 labor union badges, ribbons, and emblems, ca. 1880-1920; the Salem China Company Collection of 300 pieces of ceramic tableware dating from 1930 to 1960; the Mormon pilaster capital (Sunstone) from Nauvoo, Illinois, 1846; drawings from Walt Disney's Steamboat Willie produced in 1928; a vaudeville trunk belonging to George Burns and Gracie Allen; a rare early 18th-century embossed silk counterpane; one of the first American presses for hobby printers, made in Boston ca. 1860; and the Erard Grand Piano, built for Queen Victoria--a mint example of one of the finest pianos of the mid-1800s.

Important donations to the National Numismatic Collection and the National Philatelic Collection included 48 ancient Greek silver fractional coins of the 5th and 4th centuries B.C. and two panes of stamps issued to U.S. soldiers in the World War I Expeditionary Force to send letters home.

Conservation - In FY 1989, the Division of Conservation surveyed, treated, and mounted more than 3,200 objects, primarily in response to exhibition and loan requests. Conservation of the Museum's costume and textile collections continued as a major emphasis in FY 1989. Staff examined, stabilized, and rehoused more than 350 flags, uniforms, and other textiles in the Armed Forces History collections. Architectural and engineering work began for the new laboratory devoted to the Museum's large collections of historic textiles, costumes, and fragile organic materials. The Division contracted a conservation technician to begin an exhibit cleaning and maintenance pilot program, resulting in substantial improvements to the safety and appearance of the objects.

Archives - In FY 1989, the Archives Center opened the privately funded Center for Advertising History, which sponsors oral history and other research projects relating to advertising in America. Distinguished industry and academic representatives serve on the Center's advisory board. Staff continued cataloguing and began microfilming and conserving the Duke Ellington Collection of musical manuscripts and related historical materials. Descriptive guides now serve researchers of African-American, military, and transportation topics in the Sam de Vincent Illustrated Sheet Music Collection. Additional support for researchers include a new guide to the popular Warshaw Collection of Business Americana and improvements to the facility, including larger research areas and compact, movable shelving.

Research - Staff members in the Department of Social and Cultural History are working on a variety of research projects that draw from the existing collections and inspire future collecting endeavors. Domestic Life staff, interns, and volunteers are studying changes in 20th-century American household technology. Research on patent models resulted in several publications and a major exhibition that will tour Japan, and the United States in 1990 to help commemorate the bicentennial of the American Patent System. Pioneering work on clothing by Division of Costume staff led to the Smithsonian Institution Press's publication of Men and Women: Dressing the Part, which explores how clothing reflects attitudes toward gender, a related exhibition, and several papers and publications on 18th- and 19th-century clothing. Graphic Arts researchers are doing groundbreaking work on type makers' marks, from which they will publish a catalogue of the world's largest collection of 19th-century American printing type. Other Graphic Arts projects include a checklist of prints based on the paintings of Albert Bierstadt and a catalogue of the collotypes in the collection. Division of Textiles staff is researching an 1834 sample book of fabrics from Fort Gibson, Oklahoma, to identify manufacturers involved in the Indian trade, the types of fabrics they marketed, and additional information on aspects of trade in the West.

Staff members from the Department of the History of Science and Technology have used the unique Smithsonian Videohistory Program to produce a videohistory of robots and interview important inventors, including Mikhail Timofeyevich Kalashnikov, the designer of the AK 47 assault rifle, and Dr. Robert Ledley, inventor of the first whole body CAT-scanner. Medical Sciences staff members are researching the use of silver in medical instrumentation manufacture and methods of producing dosage forms for homeopathic pharmaceuticals. Transportation staff has nearly completed a major project listing 48,000 photographic images in the Railroad collection and continue research on the design and adaptation of closed automobiles. The Division of Engineering and Industry's work with artifacts from the Boston firm of William Bond and Son has inspired a book manuscript now in progress, and Division of Electricity and Modern Physics staff is researching 19th-century electrical instruments invented by Charles Page. The Department has published original research in the areas of navigational instruments, the history of computing, and the fire ant campaign of the 1950s. Collections-based publications under way cover U.S. microscopes, the Eisenhower jacket, preserving military headgear, a history of the dentist's office, and American clocks. This Department also contributed to the patent model exhibit mentioned above.

Staff prepared the papers of the important 19th-century architect Robert Mills, designer of the Washington monument, for publication in microfilm in conjunction with the Universities of South Carolina and Iowa, with support from the National Historical Publications and Records Commission, and various private organizations.

Exhibitions - The Museum's long-term Exhibition Reinstallation Program calls for the redesign of many of the Museum's exhibit halls with an up-to-date interpretation and presentation of the collections. In FY 1989, NMAH installed 23 exhibitions. Highlights include: "The Ceremonial Court," a permanent hall that displays several First Ladies' gowns, White House china, jewelry, and other objects from the Museum's collections in a re-creation of various White House spaces; "The Way to Independence: Memories of a Hidatsa Family, 1840-1920," which chronicles the transformation of American society through the experiences of three members of a Hidatsa Indian family; "The Perpetual Campaign: How Presidents Try To Persuade the People," which celebrates the bicentennial of the first presidential inauguration and traces how presidential candidates over the years have sought the votes of the American people; "American Television from the Fair to the Family, 1939-1989," which follows television's journey

from the 1939 New York World's Fair to its all-pervasive window on the world 50 years later; "Duke Ellington, American Musician," which commemorates Duke Ellington's career and musical legacy; and "Men and Women: A History of Costume, Gender and Power," which takes a look at some of the standards of appearance and behavior for men and women in American culture. "Fabric of a Friendship" and "Delaware 350," a double traveling exhibition, marked the 350th anniversary of the first Swedish and Finnish settlements in the United States and the relationship between those early settlers and the Algonquin Indians of the Delaware River Valley. Another traveling exhibition, "Sports Feelings: U.S./Soviet Sports Photography," featured 120 American and Soviet sports photographs depicting the universality and humanity of sports.

In FY 1990, NMAH will open its largest and most interactive exhibition to date. "The Information Age: People, Information, and Technology," a permanent show focusing on people rather than machines, will allow visitors to understand how information technology has changed the ways we live and interact over the last 150 years. A major temporary exhibition, "From Parlor to Politics: Women in the Progressive Era, 1890-1925," will examine how the rhetoric and imagery of feminine domesticity paradoxically justified women's participation in major social and political restructuring of American society. In FY 1990, the Museum will complete plans for a comprehensive visitor information and signage system. A combination of interactive graphic display monitors and fixed directional signs will provide the visitor with information about exhibitions, collections, public programs, and staff.

Public Programs - In FY 1989, the Museum's Department of Public Programs presented a wide variety of education activities, publications, forums, and media events with an emphasis on encouraging the participation of minority audiences. Popular programs emphasizing the cultural heritage of African, Asian, Hispanic, and native Americans included: the Program in African American Culture, the Jazz in the Palm Court Series, the American Sampler Program, and the Jacksonville Bandstand Program. The All-American Music Series presented four free concerts a month in Carmichael Auditorium, and NMAH held a month-long Ellington Festival to commemorate the 90th anniversary of Duke Ellington's birth and the Museum's acquisition of the Ellington Papers. By revising training and use of docents, the Museum doubled visitor participation in tours and demonstrations. In October 1989, the Museum celebrated its 25th anniversary with demonstrations, behind-the-scenes tours, opportunities to "Ask-an-Expert," slide talks, music, special activities for children, tea in the Palm Court, and a Museum birthday cake.

Other highlights of the year include:

- a three-day public conference on "Contemporary Black American Congregational Song and Worship Traditions," produced by the Program in African American Culture;
- an American Sampler program on "Dancing and Drumming Traditions," which compared African-American and native-American 19th-century musical traditions;
- a symposium on Spanish-native American relationships in the Southeast and the Southwest during the Colonial period, bringing together archeologists, historians, and ethnohistorians in a daylong public forum;
- a performance-workshop by San Antonio's Little Joe y La Familia, including a commentary on the blending of Hispanic, Anglo-American, and Czech musical influences into the distinctive norteno style played by this group;

- and a two-day public discussion of the Constitutional issues surrounding the internment of Japanese Americans during World War II, in conjunction with the "A More Perfect Union" exhibition.

With funds provided by Congress in FY 1990, the Museum will hire a permanent director to take charge of the new Program in Hispanic American History. The American Sampler program will continue in FY 1990 with music celebrating the French-American relationship, Spain in the New World, the African-American in the 18th century, the Scottish-Irish connection, as well as music of colonial America. Palm Court Cameos will highlight the music of Frank Loesser, Harold Arlen, Jule Styne, Johnny Mercer, Burton Lane, and Kurt Weill. Other programs will showcase rhythm and blues in America, and the music of Duke Ellington.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the National Museum of American History requests an increase of 1 workyear and \$95,000 to continue the development programs and exhibits to commemorate the Columbus Quincentenary.

In 1986, the Museum began a five-year program of public symposia, archaeologically based exhibitions, and related publications. The program will develop a major permanent exhibition, "American Encounters," to commemorate the Columbus Quincentenary.

The exhibition will examine the results of Columbus's arrival in the Americas by exploring cultural interactions among Hispanics, native Americans, and Anglo Americans in the Rio Grande Valley of the American Southwest. The exhibition will emphasize the strategies devised by both native Americans and Hispanics to preserve the essence of their own cultures. In addition to the exhibition, NMAH's Program in Hispanic-American Culture will undertake research and produce publications and public programs on the development of Hispanic culture in the United States.

The Museum currently has a base of 4 workyears and \$364,000 to support its Quincentenary programs. The requested increase will enable the Museum to hire a project administrator (1 workyear and \$32,000) who will be responsible for initiating and monitoring all contractual services related to actual production of the exhibition. In addition, the expanded base of funding for the Columbus Quincentenary Program in FY 1991 will enable the Museum to:

- proceed with the design and development of "American Encounters," opening in October 1992;
- continue field research and collecting for the exhibition;
- plan, develop, and test curriculum kits and interpretive activities for the exhibition;
- present lectures, performances, and other public programs that demonstrate the nature and diversity of Hispanic-American culture.

The permanent exhibition and its related public programs will reinforce the Museum's commitment to new audiences. At the same time, the Smithsonian Institution will provide the general public with a more accurate presentation of America's multi-cultural past.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - This income is from various sources, including the Museum's share of museum shop and cafeteria sales, publications royalties, and various annual allotments. In FY 1990, these funds will support the salary and benefit costs for the museum director, various special events, and the unique chamber music performance and recordings program.

In addition, funds from the Institution's Collections Acquisition, Scholarly Studies, Educational Outreach Program, Research Opportunities, and the Special Exhibition Fund support research, education and exhibition projects. In FY 1989, these funds supported the creation of an expanded space for performance and the popular educational program, "Hands on History," as well as exhibits on: life in America during the 18th century; the Columbian Quincentenary; "Clocks, Capitalism and Culture," and Rock and Roll music. These funds also supported research on such diverse topics as the history of Rock and Roll, Southern black communities, decorated violins, and American drag race pioneers. The Museum used Educational Outreach funds to support programs on Black American Congregational Song, American Jazz, and a program given in conjunction with an exhibit on an Hidatsa American Indian family. Collections Acquisition funds provided for the purchase of two major items: the Mormon sunstone and Scott Molloy Labor History Collection.

Special purpose estimates for FY 1990 and FY 1991 do not reflect expenditures under these programs; this explains the variance in totals shown between FY 1989 and the subsequent two years.

Restricted Funds - The principal sources of income for these funds are individual or corporate gifts and foundation grants provided for specific purposes. In FY 1989, NMAH received the following gifts and grants: from IBM, Computerworld Information Technology Awards Foundation, the Bell Atlantic Corporation, Digital Equipment Corporation, Xerox Foundation, Intel, and Electronic Data System for a major permanent exhibition entitled "The Information Age: People, Information, and Technology"; from Bruce Springsteen and the Recording Industry Association of America in support of a live performance program entitled "Music In America"; from the American Chemical Society for a feasibility study in support of the "Science in American Life" exhibit; from the Noxell Foundation and Campbell Soup to support oral history projects on advertising history; from the American Dental Trade Association for an exhibit on "Health in America"; from Invent America, Inc., for patent model collections; from the Association of Japan-United States Community Exchange for an exhibition on 19th-century life in America; from Smithkline Beckman Corporation and Erno Laszlo Limited, for the restoration of First Ladies' gowns; from the Pott Foundation to produce a film for the Museum's Hall of American Maritime Enterprise; from the Edward John Noble Foundation for programs on music and performances; from the Electronic Industries Association for an exhibition celebrating the 50th anniversary of television; from the American Association of Retired Persons for an exhibit of photographs, entitled, "The Seasoned Eye"; from the Andrew W. Mellon Foundation in support of the Smithsonian Chamber Orchestra; and from the American Pharmaceutical Association to support the programs of the Museum.

In FY 1990, the Museum anticipates the following contributions: from United Media for an exhibit on children in the Cold War era; from the Friends of the First Ladies for a permanent exhibit reinstallation of the First Ladies Hall; and from The 50th Anniversary Foundation Inc., U.S. Airborne, for an exhibit on the history of the Airborne in the United States.

NATIONAL MUSEUM OF THE AMERICAN INDIAN

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	-	-	-	-	-	-	-	-	-	-
FY 1990 -Estimate	61	3,946	-	-	-	-	-	-	-	-
-Base	61	4,031								
FY 1991 Estimate	179	11,618	-	-	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	<u>Base FY 1990</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1991</u>
FTE Allocation.....	61	118	179
11 Personnel Compensation.....	1,776	3,521	5,297
12 Personnel Benefits.....	533	1,063	1,596
21 Travel.....	98	375	473
22 Transportation of Things.....	0	100	100
23 Rent, Communications & Utilities.....	159	222	381
24 Printing & Reproduction.....	0	20	20
25 Other Services.....	1,221	1,669	2,890
26 Supplies & Materials.....	117	310	427
31 Equipment.....	127	307	434
Total	<u>4,031</u>	<u>7,587</u>	<u>11,618</u>

Analysis of Increase

Necessary Pay.....	1,051
Program Funds.....	6,536

ABSTRACT - Establishment of the National Museum of the American Indian (NMAI), based on the collection of the Museum of the American Indian, Heye Foundation, will provide the Smithsonian Institution with a significant and new vehicle of communication with American Indian people and the general public through its collections, research, and public programs that encompass this hemisphere. NMAI facilities will include a building of suitable size and design on the Mall at the foot of Capitol Hill east of the National Air and Space Museum; an exhibition and education center on the street-level floor of the Old United States Custom House in New York

City; and a collection, study, and conservation facility at the Museum Support Center in Suitland, Maryland.

For FY 1991, the Institution requests resources of 93 workyears and \$6.536 million for: operations (71 workyears and \$5.286 million above a base of 61 workyears and \$4.031 million); the Native American Collections Documentation Research Program (18 workyears and \$1.0 million); and the Special Review Committee on Native American Materials (4 workyears and \$.25 million). The Institution requires \$1.051 million for Necessary Pay for existing staff funded in this line-item. In accordance with the terms of the authorizing legislation, the Institution requests that funding provided in this line-item remain available until expended.

The Smithsonian also is requesting \$8.130 million for preparation of the Custom House space, initiation of design for the Suitland building, completion of overall programming, and continuation of planning for the Mall museum. Justifications for these activities are in the Construction portion of this budget.

PROGRAM - The Museum of the American Indian, Heye Foundation, located in New York City, opened its doors to the public in 1922. The Museum's founder, George Gustav Heye, initiated the collection near the turn of the century as a result of expeditions in this country and in Ecuador, Mexico, the West Indies, the Amazon, and Central America. The collection is one of the world's richest assemblages of artifacts of the indigenous cultures of the Western hemisphere. Its North American Plains material forms one of the largest groupings found anywhere. The great civilizations of the Inca, Aztec, and Maya are also represented, as well as the remote forest tribes of the Amazon and the Arctic Eskimo. From the American Southwest are Kachina dance masks, dolls, and baskets. The collection also includes a 40,000-volume library and a photographic archive with more than 80,000 negatives and prints chronicling Indian life.

The Heye Foundation collection will form the base of the Museum of the American Indian. When it opens its doors to the public, it will inspire an exponential increase in Native American studies and a range of new ideas for exhibitions, research, and insight into historic and contemporary Indian culture.

Federal funding in FY 1990 will allow the Smithsonian to:

- develop plans for programs, exhibitions, research, and collections management;
- provide central administrative services;
- provide care and custody of the collection;
- maintain and secure the existing buildings and temporary structures in New York;
- transfer existing museum employees;
- provide administrative costs to support the new Museum's Board of Trustees and expenses of its members, all of whom serve without compensation.

Funding in FY 1991 and future years will enable the Smithsonian to continue and expand these activities; construct a museum on the last site on the Mall as well as a

collection and research center at Suitland; and renovate space for the George Gustav Heye Center at the Old United States Custom House in New York. The Suitland facility will provide a protected environment for collection materials not on display and make them available for research. Collection documentation and a resource collection of print materials will also be housed at the collection center, together with facilities for conservation treatment.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the Institution requests resources of 93 workyears and \$6.536 million for: a fund-raising campaign (11 workyears and \$670,000); additional central administration (3 workyears and \$186,000); care and custody of collections (7 workyears and \$1,132,000); continued formation of planning and coordination teams (10 workyears and \$835,000); Native American staff development and training (12 workyears and \$707,000); Custom House programs (5 workyears and \$1,037,000); maintenance and security (23 workyears and \$719,000); the Native American Collections Documentation Research Program (18 workyears and \$1,000,000); and the Special Review Committee on Native American Materials (4 workyears and \$250,000).

Fund-raising Office (11 workyears and \$670,000) - Public Law 101-185, establishing the National Museum of the American Indian, requires that construction appropriations be supplemented by non-Federal funds. A national fund-raising campaign will attract both large and small gifts from a variety of non-Federal sources.

To administer fund-raising efforts for the NMAI, the Institution requests resources for professional fund-raising personnel and technical and clerical support staff (11 workyears and \$471,000). Under the immediate supervision of a national campaign director, the staff will design the campaign and identify and recruit volunteers. The requested funds also will support research and cultivation of prospective donors (\$162,000) as well as consultant expenses and reproduction costs (\$37,000).

The new fund-raising office will also work to secure donated goods and services, especially donated office space in an off-Mall location for the duration of the fund-raising campaign.

Additional Central Administration (3 workyears and \$186,000) - The Office of Procurement and Property Management has responsibility for all procurement, contracting, and property management of the National Museum of the American Indian. This responsibility has three components: acquiring necessary supplies, equipment, and services for the Museum's present operations and facilities in New York City; contracting for architectural and engineering services and construction services associated with the development of new facilities in New York City, Washington, D.C., and Suitland, Maryland; and providing purchasing and contractual support for the planning, development, and implementation of the research, collections management, exhibition, and other programs that will take place in those facilities. In anticipation of this additional workload, the position of contract specialist was established in the FY 1990 appropriation to serve initial administrative needs. To keep pace with expected programmatic and construction activities, the Institution requests two additional positions for FY 1991: a procurement specialist and a property management specialist (2 workyears and \$94,000).

Like other Smithsonian museums, the National Museum of the American Indian will report to the Office of the Assistant Secretary for Museums (OASM). This Office assigns a program manager to each Smithsonian museum to assist in such day-to-day concerns as program policy, recruitment and promotion, budgetary and fiscal matters,

and analysis of other issues on the museum's behalf for senior management review. An additional program manager in FY 1991 will allow OASM to serve the varied needs of the NMAI (1 workyear and \$47,000).

For general operating support for these "impact" staff, the Institution seeks \$45,000 for furnishings, equipment, supplies, and travel between Washington, D.C., and New York City operations.

Care and Custody of Collections (7 workyears and \$1,132,000) - The relocation of the one million collection objects as well as visual media, archives, and library materials from existing museum facilities in New York to Washington, D.C., and Suitland, Maryland, is a formidable task. The large number of collection objects to be moved, the variety of types and physical conditions of these objects, the need for automated record keeping, the lack of physical space required for the move, and the distance of transfer pose unusual and complex challenges.

The collections support budget for the NMAI includes two components: existing and new permanent staffing and all other funding needs for the collections prior to, during, and after relocation from New York; and temporary staffing and one-time funding needs for the move of the collections from New York. In this context collections include objects, visual media, and archive and library materials.

The NMAI collection support priorities in FY 1991 are to assist in planning the new NMAI collection center in Suitland and to begin comprehensive planning of the relocation of the collections from New York. This overall planning will address such issues as development of an automated project management plan to schedule the move and update the schedule regularly; establishment of an appropriate automated data management system to control the objects during the move; determination of the types and quantities of move supplies and equipment needed; identification of any physical or chemical contaminants that must be removed from the collections prior to their relocation and development of plans for cleaning them; selection of the types of transport necessary; identification of physical needs of existing museum facilities in New York, together with recommendations for necessary modifications; and preparation of additional space for staging the move. Proper planning is necessary at the beginning of the process in order to ensure that the relocation itself will occur smoothly, efficiently, and in a timely fashion. The Institution expects that detailed planning will delineate most procedures for the move. It is inevitable, however, that some issues will not become known until the move itself is under way and will have to be dealt with as recognized.

The NMAI will hire both permanent and temporary administrative staff, conservators, museum specialists and technicians, data management staff, laborers, and others to accomplish the move of the collections from New York to Suitland. In addition, the NMAI may contract some work, such as conservation treatment or decontamination, to outside individuals or firms. Administrative staff will plan the move; revise the policies, procedures, and schedule as necessary; procure the necessary supplies and equipment; coordinate the logistics; and monitor progress. Conservators will assess the condition of the collections prior to the move, develop handling and packaging procedures and train the move staff to use them, and provide conservation treatment prior to the move when necessary. The specialists and technicians will inspect and clean objects, create automated invoices, and stabilize, pack, unpack, and place collections into permanent storage units in the NMAI collection center in Suitland. The data management staff will provide automated data to track the objects during the move and give other assistance in data management.

The laborers will transport collections from one location to another within a facility and onto trucks as well as provide other manual labor, such as the dismantling of existing shelving.

During the move, permanent collection management and data management staff will continue museum activities. Within limitations imposed by the move, for example, Native Americans and researchers will be allowed access to the collections, loans will be made, and objects will be prepared for exhibit.

Because the move will last several years, existing facilities in New York will require considerable improvements even while the collections are transferred. The collection objects themselves are stored in overly crowded conditions. No space exists for staging the move, storing supplies and equipment, providing minimum conservation treatment, cleaning and packing the collections, permitting temporary storage of prepared collections, or holding collections ready to be loaded onto move trucks. To provide space for all these functions, funds requested for FY 1991 will construct an annex to the Research Building in the Bronx.

Continued Formation of Planning and Coordination Teams (10 workyears and \$835,000) - The major task of the planning and coordination teams will be to plan NMAI activities so that the museum building can be designed to serve programmatic needs. To accomplish these tasks, the Institution will establish representative committees for collections, public programs, facilities, administration, technology, and research and will provide staff assistance for each committee. The facilities project manager, assistant facilities project manager, research coordinator, and secretary will examine existing programs. They will also interview a wide spectrum of knowledgeable advisors and record their insights.

Under the direction of the NMAI director and in cooperation with numerous advisors, a new library services coordinator, archives technician, public programs coordinator, and secretary will develop the new museum's program plans. They will make preliminary recommendations for exhibitions, research, and outreach activities and prepare preliminary budgets to support them.

For all program planning efforts, the Smithsonian must strengthen its networks among American Indian communities nationwide. Continuous dialogue between the Smithsonian and the American Indian community will help accomplish program goals. The staff of the NMAI will work closely with Native American advisors to improve avenues for outreach activities. A public affairs specialist will produce a newsletter on the NMAI planning process for the American Indian community. Additionally, a full-time liaison coordinator will consult with American Indian communities on various phases of the program plan.

Included in this request are funds to rent and prepare office space and provide supplies for planning and coordination teams and for American Indian trainees assigned to senior staff members.

Native American Staff Development and Training (12 workyears and \$707,000) - The Institution will organize an American Indian training program to increase the number of American Indian people in the museum field, in every discipline and at all levels. This training program will focus initially on the special training and development needs of American Indian tribal museums and cultural and community centers as well as on the emerging requirements of the National Museum of the American Indian, but it will expand as additional needs become evident. The first step is the creation of ten

positions specifically for American Indian people who will serve as assistants to senior staff positions not initially occupied by American Indians. Each of these "upward mobility" positions will be awarded on a competitive basis within the American Indian community. Once hired, each trainee will have a training and promotion plan for moving toward increased authority and responsibility within the NMAI hierarchy.

Additionally, a training coordinator and a secretary will establish a program for assigning American Indian internships of various lengths and for various disciplines within NMAI and throughout the Smithsonian Institution. Undoubtedly, many interns will intend from the outset to return to their communities. Appropriate short- and long-term courses will augment the training opportunities for the interns, the "upward mobility" staff, and the American Indian museum community at large. The Institution will seek additional funding for internships and training courses in subsequent years.

Custom House Programs (5 workyears and \$1,037,000) - In support of New York's Columbus Quincentenary observances, the Smithsonian Institution Traveling Exhibition Service (SITES) will use material from the Heye Foundation collection to develop an exhibition scheduled to open in 1992 in part of the Old Custom House in New York City. Funding is requested to begin planning the exhibition, identifying the objects, organizing and working with an advisory committee, and preparing preliminary designs. The Institution will seek funds for construction and installation of this exhibition in FY 1992.

A partial staff for the Custom House site, to include an assistant director, secretary, public programs coordinator, and security personnel, will help prepare ancillary programs for the 1992 exhibition and more permanent programs, including additional exhibitions, educational services, and a resource center, for the full opening of the Old Custom House site in 1994.

Maintenance and Security (23 workyears and \$719,000) - The Smithsonian expects to assume responsibility for the security of the Heye Foundation collection and property of the NMAI in February 1990. The request for 23 positions, together with the ten guards provided in FY 1990, will achieve an acceptable level of security coverage for the Museum's exhibit and storage facilities.

For FY 1991, the Institution requests \$350,000 to hire 15 guards to supplement existing guard staff in the exhibit galleries at Audubon Terrace and to provide a full complement of guards to secure the entrances and patrol NMAI facilities during the evening and night hours. The requested guards will protect the collections on exhibit and in storage, while allowing increased access by staff and scholars for study, documentation, and conservation of the artifacts. The additional resources also will ensure that the buildings are patrolled during each shift to protect against fire, water damage, theft, and vandalism.

The Office of Protection Services (OPS) plans to integrate the guard force now serving the Cooper-Hewitt Museum with the new guards for the NMAI, bringing the Smithsonian's total security force in New York to 46 guards. The existing supervisors at the Cooper-Hewitt will provide some of the supervision and training needed for the larger guard company. For the rest, the Institution requests funds to hire an assistant chief, a lieutenant, and five sergeants (7 workyears and \$217,000). The Institution also requests one alarms technician who will install, maintain, and repair the security systems and devices at the Smithsonian's New York facilities (1 workyear and \$35,000).

The requested resources will help reduce the risk of damage and theft of the valuable collections of Indian artifacts and historical materials. The Institution will request funding in subsequent years to upgrade the security systems at the NMAI facilities and to provide occupational health services to Smithsonian staff in the New York area.

In addition, \$117,000 is necessary to cover the cost of utilities for the NMAI operation in New York. The Institution bases this estimate on actual costs for FY 1989 provided by the Heye Foundation. The requested amount will provide base funding for electricity (\$59,000), fuel oil (\$20,000), gas (\$1,000), telephone (\$20,000), and postage (\$17,000).

Native American Collections Documentation Research Program (18 workyears and \$1,000,000) - The Native American Collections Documentation Research Program has three objectives: to increase the Institution's ability to make timely and informed decisions in response to requests from Native American people for return of human remains, funerary objects associated with specific burials, and cultural artifacts of ceremonial or religious significance in the collections of both the National Museum of Natural History/Museum of Man and the National Museum of the American Indian; to initiate programs that will encourage increased dialogue and exchange of information between the Institution's scholarly community and Native American groups on matters of mutual interest and concern; and to initiate research programs that will attempt to obtain as much scientific information as possible on collections that may be repatriated.

The Program is, in part, a response to recently enacted legislation for the National Museum of the American Indian that mandates the return of certain materials in the Institution's collections. It also is a response to increasing interest by Native American people for knowledge about and access to collections relating to their culture and history. This funding will:

- establish the provenance of Native American collections, including evidence linking items to known tribal groups and determining the legal and ethical circumstances surrounding the Smithsonian's collections and acquisition of those items;
- open channels of communication between the scientific community and Native American groups to build better understanding and increased sensitivity to the cultural, ethical, and scientific issues pertaining to the Native American collections;
- evaluate the present and potential scientific importance of particular collections and develop programs to obtain as much scientific information as possible before materials are returned;
- review and make informed decisions on deaccessioning collection items.

The Institution will hire an administrator to provide overall direction to the Documentation Research Program and coordinate the activities of the staff. It also will hire one liaison officer, seven research specialists, and nine research assistants (18 workyears and \$675,000). The remaining funds will provide for two postdoctoral fellows, travel expenses of staff and advisory committees, and the purchase of office and research equipment and supplies for the Program (\$325,000). While recruitment for the new positions is under way, the Institution will require

salary lapse (estimated \$225,000) for space renovation in the Natural History Building and start-up equipment.

The Native American collections of the Institution are of substantial interest to Native American peoples. This interest will increase as the National Museum of the American Indian continues to develop. More accurate documentation and curation of the collections will make them more accessible to Native American groups and will identify those objects and collections that should be considered for return to these groups. The Native American Collections Documentation Research Program will enhance the Institution's responsiveness to repatriation requests by Native American communities and to the growing interest among Native American groups for anthropological information.

Special Review Committee on Native American Materials (4 workyears and \$250,000) - The Institution will provide the administrative coordination for the special review committee that will monitor and review the inventory, identification, and return of American Indian human remains and funerary objects located in both the National Museum of Natural History/Museum of Man and the National Museum of the American Indian collections.

This committee consists of five non-Smithsonian people who also will advise the Secretary of the Smithsonian Institution on matters relating to disputes between Native American groups regarding jurisdiction over materials that may be returned and on disputes between the Institution and Native American groups regarding repatriation decisions.

To conduct these activities, the Institution will hire an administrator to coordinate overall repatriation endeavors, a fund manager, and two archives technicians to assist committee members and other researchers in reviewing archival documents (4 workyears and \$125,000). The remaining funds will be used for committee member travel and compensation and office equipment and supplies (\$125,000).

Matters reviewed by the committee will involve complex issues of tribal jurisdiction and law as well as the cultural and archeological context of disputed materials. An independent committee will provide a critical buffer between the concerns of the scientific and scholarly community and the interests of Native American groups.

NONAPPROPRIATED SOURCES OF FUNDING: The Smithsonian has established an unrestricted account to receive donations for the NMAI. Investment income may be available from the Heye Foundation endowment, which is to be included in the property transfer. Until the endowment becomes the property of the Institution, however, decisions regarding its management and funds generated cannot be made.

NATIONAL MUSEUM OF AMERICAN ART

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	114	5,545	-	74	3	1,055	-	827	-	-
FY 1990 -Estimate -Base	122 122	5,581 5,692	-	65	3	460	-	1,000	-	-
FY 1991 Estimate	123	5,817	1	194	3	554	-	654	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	122	1	123
11 Personnel Compensation.....	3,468	101	3,569
12 Personnel Benefits.....	655	24	679
21 Travel.....	45	0	45
22 Transportation of Things.....	59	0	59
23 Rent, Communications & Utilities.....	45	0	45
24 Printing & Reproduction.....	118	0	118
25 Other Services.....	511	0	511
26 Supplies & Materials.....	311	0	311
31 Equipment.....	130	0	130
Collections Acquisition.....	350	0	350
Total	5,692	125	5,817

Analysis of Increase

Necessary Pay.....	110
Program Funds.....	15

ABSTRACT - The mission of the National Museum of American Art (NMAA) is to acquire, preserve, study, and exhibit works of American art. Paintings, sculpture, graphic arts, and crafts--including photography and folk art--are within the scope of its collecting mandate. The Renwick Gallery, part of the National Museum of American Art, focuses upon American crafts and decorative arts. The Museum also maintains the Barney Studio House, a period home open for tours and interpretive programs.

For FY 1991, NMAA requests an increase of 1 workyear and \$15,000 to continue the development of a series of exhibitions commemorating the Columbus Quincentenary. The Institution requires \$110,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - With a permanent collection of nearly 35,000 objects, the National Museum of American Art is a nationally recognized center for research, exhibitions, and public education in American art. NMAA acquires several hundred new works of art each year, and, due to limited exhibition space, objects from the permanent collection rotate from storage to the galleries. The collection, however, is available for study and for loan to other museums throughout the country. Conservation staff restore and preserve these irreplaceable artworks to ensure their availability for future generations. Scholarly research by the professional staff results in publications, exhibitions, and educational programs.

Researchers from a variety of disciplines use the Museum's extensive reference materials. The NMAA has developed and maintains three unique research data bases:

- Inventory of American Paintings Executed before 1914 - data on more than 250,000 paintings by American artists in both public and private collections;
- Smithsonian Art Index - a list of artworks housed in the Institution's non-art museums;
- Index of American Art Exhibition Catalogues - documentation of artistic activities in the United States and Canada.

These inventories comprise more than 500,000 computer entries and constitute the most complete data base in existence in the field of American art. A fourth computer-based research resource, the Inventory of American Sculpture, begun in 1985, will ultimately add more than 100,000 records to the Museum's data base.

Collections - The Museum received a number of significant gifts during FY 1989, including sculpture by Augusta Savage and Bryan Hunt, an important large drawing by Luis Jimenez, and an assemblage by Rudy Fernandez. These works strengthen the Museum's modern and contemporary holdings. Works by Man Ray, Max Weber, Tom Wesselman, William Henry Jackson, and Irving Penn augmented the graphic arts collection.

New accessions have enhanced the Museum's folk art collection, including paintings by Howard Finster and William Hawkins and sculpture by Felipe Archuleta and Jose Delores Lopez, as well as gifts from Herbert Waide Hemphill, Jr. Other gifts include paintings by Irene Rice Pereira, John Koch, Edwin Dickinson, Mark Roeyer, and Louis Lozowick, and maquettes by Mary Miss and Stan Dolega created for the General Services Administration's Art-in-Architecture Program. Donations of works by Paul Bogatay and Margaret Craver have supplemented the Renwick Gallery's collection.

The Museum purchased Louis Comfort Tiffany's Market Day Outside the Walls of Tangiers, one of the earliest American canvases to introduce the Orientalist aesthetic to the United States. NMAA also purchased Bryan Hunt's Stillscape I to accompany its companion piece, Stillscape II, which the Museum received as a gift. Both sculptures are on display in the Museum's courtyard. With support from the Smithsonian's Collections Acquisition Program, the Renwick acquired works by Dale Chihuly, William

Daley, Wayne Higby, and Toshiko Takaezu. Other purchases include paintings, sculpture, graphic works, photographs, and craft pieces by artists representing the full breadth of American artistic achievement.

As part of the Institution's Special Employment Initiative, funding for an additional curator position was provided in FY 1990. The new curator position will provide an expertise which will strengthen the museum's scholarly research capabilities, its exhibition program, and its collection efforts in an atmosphere of cultural diversity.

Publications - Smithsonian Studies in American Art, the Museum's scholarly journal, expanded to a quarterly schedule in 1989. Copublished with Oxford University Press and acclaimed since its debut three years ago, its circulation has reached 1,500. The Association of American Publishers, Inc., named the journal Best New Journal for 1989 in the Business/Social Sciences/Humanities category, and the American Federation of Arts selected the journal for an Award of Excellence in its annual design competition.

MIT Press and NMAA copublished The Photography of Invention: American Pictures of the 1980s, which includes contemporary works by 90 artists. With the Smithsonian Institution Press (SIP), the NMAA published Paul Manship in conjunction with an exhibition of Manship's work and The Patricia and Phillip Frost Collection: American Abstraction, 1930-1945 to accompany a major exhibition by the same title. Also published with SIP was the comprehensive study of Albert Pinkham Ryder by Elizabeth Broun, which will complement an exhibition on Ryder to open in 1990. Upcoming catalogues include two copublishing projects with SIP: Visual Poetry: The Drawings of Joseph Stella and a catalogue for the exhibition of the Herbert Waide Hemphill, Jr. Collection of American Folk Art. The Museum received a Getty grant for American Artists at the Nineteenth-Century Paris Salons, which will enable NMAA to copublish this work with Cambridge University Press.

The Museum and SIP produced a postcard book with 24 full-color images from the Frost Collection. For the Manship exhibition, the publications office produced two brochures: The Art of Paul Manship and Mythology and the Art of Paul Manship. In addition, the Museum published two newsletters: American Art Forum Highlights and The American Art Network, the latter serving the community of former Smithsonian fellows and scholars throughout the world.

The Washington Book Publishers' 1989 Design Competition winners included a first-place award for the fall 1988 issue of Smithsonian Studies in American Art and awards for both Paul Manship and Perpetual Motif: The Art of Man Ray, copublished by the Museum and Abbeville Press in 1988. The American Association of Museums presented an Award of Distinction to the Lucas Samaras invitation during its annual publications competition.

Research Resources - In March 1988, NMAA began a nationwide solicitation of information for its newest research data base, the Inventory of American Sculpture. The Museum issued questionnaires to more than 12,000 museums, historical societies, and cultural institutions around the country. NMAA extended this solicitation in FY 1989, mailing questionnaires to more than 10,000 private collections. The inventory will ultimately survey all outdoor sculpture in the United States, in cooperation with the National Institute for the Conservation of Cultural Property, the American Association for State and Local History, the National Conference of State Historic Preservation Officers, the National Park Service, and the Smithsonian's

Conservation Analytical Laboratory. The joint effort of NMAA and the National Institute for Conservation has already raised more than one-third of the fundraising goal for this project, including grants from the Getty Grant Program and the Pew Charitable Trust.

The Inventory of American Paintings Executed before 1914 will also benefit from the sculpture solicitation because the questionnaires include an appeal for new and updated information on paintings. NMAA's renewed contact with individuals and organizations that contributed information to this earlier research data base will enhance the Inventory of American Paintings for the 1,800 researchers who use this resource annually.

The Museum has preserved nearly 300 nitrate and deteriorated acetate negatives from its Peter A. Juley and Son Collection on stable film for future use. NMAA added more than 3,500 slides and 6,000 prints to its Slide and Photograph Archives in FY 1989. The total number of holdings now in the Museum's collection is nearly 120,000 slides and 250,000 prints and negatives.

Museum staff researched approximately 2,500 artists' names for the Artist Authority Project. This research ensures that the information on each recorded artist is accurate and identical among the seven data bases the Museum maintains. Mailings are in progress to request additional biographical information on selected artists.

Exhibitions - During FY 1989, the Museum exhibited works by individual artists and assembled showings based upon thematic topics relevant to American art. Museum curators organized six exhibitions, all of which are touring or will tour to museums throughout the United States:

- "Perpetual Motif: The Art of Man Ray" explores the career of this famous surrealist artist, who worked in Europe and America during the first half of the 20th century, through a major retrospective of his paintings, photographs, sculptures, and assemblages (four venues);
- "The Art of Paulanship" reexamines the figurative subjects, animal sculptures, decorative works, miniatures, medals, and works on paper of this artist, whose work is experiencing a resurgence of popular and scholarly interest (eight venues);
- "The Boat Show: Fantastic Vessels, Fictional Voyages" shows the diverse ways in which artists interpret the ship and its journey in a range of contemporary crafts media, including glass, ceramics, wood, and clay (three venues);
- "The Photography of Invention: American Pictures of the 1980s" celebrates the 150th anniversary of the invention of photography with an assembly of contemporary works, primarily by young, avant garde artists (three venues);
- "The Patricia and Phillip Frost Collection: American Abstraction, 1930-1945" is the premier showing of the Frosts' major gift of paintings and sculpture by members of the American Abstract Artists group, donated to NMAA in 1986 (four to five venues beginning in 1991);
- "Masterworks of Louis Comfort Tiffany," at the Renwick, emphasizes Tiffany's interpretation of natural forms in the design of stained-glass windows,

lamps, vases, and other works produced as commissions, many of them exhibited to the public for the first time (two venues).

In FY 1989, the Renwick Gallery hosted three exhibitions organized by other institutions: "American Art Pottery, 1880-1930 from the Cooper-Hewitt Museum" (toured by the Smithsonian Institution Traveling Exhibition Service); "Stephen deStaeblér: The Figure" (toured by the Saddleback College Art Gallery); and "Bound to Vary: Billy Budd, Sailor" (toured by the Guild of Book Workers, Mount Holly, New Jersey).

In addition to exhibitions, NMAA curators organized two temporary installations: "Drawings from the Collection" and "Thomas Hart Benton and the U.S. Navy." "Images of Innocence: The Child in American Art" remained on view, and the Museum rotated miniatures for exhibition in the Doris M. Magowan Miniature Gallery. The Renwick installed new acquisitions from its growing permanent collection of contemporary American crafts, and NMAA remodeled and reinstalled galleries on its third floor. Both the Renwick and NMAA produced extended labels for major works in their permanent collections.

During FY 1989, NMAA lent more than 200 works from its collections to other museums throughout the United States and abroad, at the same time continuing its established policy of placing its European works on long-term loans to other institutions. Concluding a loan to the National Art Gallery of New Zealand in Wellington was a group of 17th- and 18th-century English and Dutch paintings, sent in exchange for the loan to the Museum of John Singleton Copley's portrait, Mrs. Humphrey Devereux.

Projected exhibitions for FY 1990 include: "Slave Quilts from the Ante-Bellum South"; "Treasures of American Folk Art from the Abby Aldrich Rockefeller Folk Art Center"; "American Drawings from the Cooper-Hewitt Museum: Training the Hand and Eye"; "George Ohr: The Mad Potter from Biloxi"; "Irving Penn Master Images" (co-organized with the National Portrait Gallery); "Albert Pinkham Ryder"; "Tradition and Innovation: New American Furniture"; "Missouri Portfolio: The Drawings of George Caleb Bingham"; "Contemporary American Beadwork"; "Visual Poetry: The Drawings of Joseph Stella"; and "American Folk: The Herbert Waide Hemphill, Jr. Collection."

The Museum continues research and preparation for the following exhibitions planned for FY 1991: "The West as America: 1820-1920," scheduled to open as part of the Smithsonian's Columbus Quincentenary program; "Tokens of Affection: The Portrait Miniature in America"; "Drawing with Color: Pastels of the 1980s"; "Homecoming: William H. Johnson and Afro-America, 1938-1945"; and, at the Renwick, "Contemporary American Studio Jewelry."

Interpretive Programs - During 1989, the Museum and its Renwick Gallery offered a diverse program of lectures, films, panel discussions, crafts demonstrations, seminars, family days, and workshops for teachers and students. In conjunction with Black History Month, these programs included a concert by the Howard University Jazz Ensemble accompanied by a lecture on the influence of jazz on 20th-century art, by Gwendolyn Everett; a poetry reading by E. Ethelbert Miller, director of the Afro-American Resource Center, Howard University; and an illustrated lecture, "Free Within Ourselves," presented by Dr. Regina A. Perry, professor of art history at Virginia Commonwealth University, Richmond.

In conjunction with the exhibition "Perpetual Motif: The Art of Man Ray," NMAA offered an all-day international symposium, "Dada and Surrealism: A Symposium in

Honor of Man Ray," attended by more than 400 people. Participants included Dawn Ades, professor of art history and theory at the University of Essex in England; Michel Sanouillet, director of the Center du Vingtieme Siecle at the Universite de Nice in France; and Dickran Yashjian, chairman of the department of comparative culture at the University of California at Irvine. A grant from the Ebsworth Foundation supported this symposium. NMAA also offered four Man Ray films and a three-hour photography workshop for high school students and teachers.

To complement the special exhibition "The Art of Paul Manship," NMAA presented a series of six lectures and offered two children's workshops on mythology, storytelling, demonstrations in clay, and hands-on sculpture making. A variety of programs accompanied "The Photography of Invention" exhibition, including a series of four lectures, a computer demonstration by artist George Legrady, two photography workshops for students and teachers, and a workshop for visually impaired visitors.

During 1989, the Museum presented new interpretive programs designed to increase accessibility of two exhibitions. Visually impaired and other visitors could carry hand-held receivers through several sections of "The Photography of Invention" exhibition. These "sound sticks" relayed tape-recorded descriptions of selected works in the exhibition. In conjunction with "The Patricia and Phillip Frost Collection: American Abstraction, 1930-1945," an interactive video program allowed visitors to see five artists at work and to hear their observations on the life of the abstract artist during the 1930s and 1940s.

As part of the Institution's Special Employment Initiative, funding for an education specialist position was provided in FY 1990. The addition of the new position will help the Museum address a long-standing deficiency in the area of educational programming and assist the Museum in attracting minority audiences to attend its exhibitions and educational and public programs.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, NMAA requests an increase of 1 workyear and \$15,000 to continue the development of a series of exhibitions commemorating the Columbus Quincentenary.

The National Museum of American Art will mark the historic international observance of the 500th anniversary of Christopher Columbus's voyages to the New World with a series of major exhibitions. These exhibitions will address three distinct themes in American art that illustrate the social and cultural changes resulting from interactions of European and indigenous American cultures during the 19th and 20th centuries.

With funding provided in FY 1989 and FY 1990, the Museum is developing the first of these exhibitions, "The West as America: 1820-1920." This exhibition will present artworks and cultural objects that portray the dreams that inspired America's westward expansion during the 19th century and the complex legacy of experience those dreams engendered, both for native Americans who had occupied their lands since Columbus's discovery and for the new settlers of the western lands. Using paintings, sculptures, graphic arts, printed books, and collateral materials to show how the receding frontiers of the West assumed a mythic attraction for Americans between 1820 and 1920, the exhibition will highlight an especially rich area of Smithsonian collections, including major works by George Catlin, Charles Bird King, John Mix Stanley, and Thomas Moran. New research will explore the dual nature of the settlement of the West, both the positive aspects of development and the problems and

dislocations, physical and cultural, that attended this intrusion into nature's wilderness and the encounter with its native inhabitants.

During FY 1991, the Museum will continue preparation for two other Quincentenary exhibitions. "Chicano Art: Resistance and Affirmation" will explore the roots and complexities of the Chicano Art Movement through an examination of artwork produced between 1965 and 1985 by a particular segment of the Latino population in the United States--individuals of Mexican heritage who identified themselves as "Chicanos" with recognizable, culturally related characteristics. With its focus on artists of Mexican heritage, this exhibition is intended to appeal to members of the Hispanic community and intensify the significance of the Quincentenary celebration for them. "American Art at the 1893 World's Columbian Exposition in Chicago," being developed in collaboration with the National Portrait Gallery, will consist of approximately 150 to 200 works selected from the more than 1,200 paintings and sculptures originally displayed as part of the 1893 World's Fair which celebrated the 400th Anniversary of Columbus's discovery of America. The exhibition of these American works of art at the Exposition's Fine Arts Building is credited as a central factor in redefining both the American and European attitudes towards the artists of this country at the end of the 19th century. A catalogue for the NMAA/NPG retrospective will expand on themes in the exhibition itself through essays on the art, architecture, and cultural impact of the 1893 Columbian Exposition.

For FY 1991, the Museum requests the addition of 1 workyear and \$15,000 to the existing FY 1990 base level for the Quincentenary exhibitions to continue development and installation of "The West as America," and to support the initial research and planning for "Chicano Art" and "American Art at the 1893 World's Columbian Exposition in Chicago." The requested increase will supplement the base level sufficiently to allow the Museum to hire a second research/planning assistant position to work on the latter two exhibitions. This assistant will also help the NMAA curatorial staff locate and compile material critical to the "Columbian Exposition" exhibition and accompanying publication.

Additional support for these Quincentenary exhibitions will ensure that NMAA makes a significant contribution to the Smithsonian's Columbus Quincentenary celebration by highlighting these three important aspects of American history as presented by American artists in their work.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Annual Smithsonian allotments and fees for services provide these funds. Examples of fees received are:

- sale of deaccessioned works of art;
- royalties from publications;
- exhibition participation fees;
- revenue shares from restaurant and gift shop sales;
- sales of slides and photographs;
- tuition reimbursement from universities for NMAA interns.

During FY 1989, funds from the J. Paul Getty Center for the History of Art and the Humanities continued to support the archival preservation of the Juley Collection of photographs. Exhibition fees allowed the employment of one full-time staff person in the registrar's office to coordinate NMAA loan activities. During 1989, exhibition fees also funded assembly costs of the Man Ray exhibition. Tuition reimbursements received from universities enabled NMAA to provide stipends for 11 summer interns in 1989. With allotment funding NMAA took temporary measures to prevent further damage to the Barney Studio House after structural tests found evidence of deterioration in 1988. Funds from the Smithsonian's Collections Acquisition, Scholarly Studies, Research Opportunity, and Special Exhibition Funds supported research, education, and exhibition programs.

Restricted Funds - Individuals, foundations, and corporations provide funds for specific purposes. A generous gift from the Renwick Collectors' Alliance in 1988 helped initiate the James Renwick Fellowship Program in American Crafts. The Institution awarded two fellowships in 1988 and two in 1989 to outside scholars for study at NMAA. In FY 1989, the Renwick Alliance also supported a four-month curatorial fellow (\$5,000) and committed to a one-year position for a collections acquisition assistant (\$30,000). The Renwick Alliance donated additional funds for the purchase of works of art (\$30,000). The Museum used funds generated through the American Art Forum to purchase the painting Market Day Outside the Walls of Tangiers, by Louis Comfort Tiffany. NMAA received contributions from several sources for the programs associated with "The Photography of Invention" exhibition. Tiffany & Company provided funds for the Tiffany exhibition, which opened in September 1989. The J. Paul Getty trust grant program provided \$30,000 to publish American Art at the Nineteenth-Century Paris Salons by Lois M. Fink.

NATIONAL PORTRAIT GALLERY

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	88	4,125	-	20	-	228	-	321	-	117
FY 1990 -Estimate	89	4,212	-	41	-	73	-	559	-	-
-Base	89	4,296								
FY 1991 Estimate	89	4,403	-	42	-	54	-	773	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	89	0	89
11 Personnel Compensation.....	2,882	70	2,952
12 Personnel Benefits.....	393	12	405
21 Travel.....	46	15	61
22 Transportation of Things.....	98	0	98
23 Rent, Communications & Utilities.....	40	0	40
24 Printing & Reproduction.....	85	0	85
25 Other Services.....	179	10	189
26 Supplies & Materials.....	133	0	133
31 Equipment.....	17	0	17
Collections Acquisition.....	423	0	423
Total	4,296	107	4,403

Analysis of Increase

Necessary Pay.....	82
Program Funds.....	25

ABSTRACT - The National Portrait Gallery (NPG) is dedicated to the exhibition and study of portraits of people who have made significant contributions to American history and of the artists who created such portraiture.

For FY 1991, NPG requests an increase of \$25,000 for support of the Columbus Quincentenary exhibitions. The Institution requires \$82,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The National Portrait Gallery explores the heritage and accomplishments of the American people by collecting, studying, preserving, and exhibiting portraits in all media as both historical and artistic documents.

As NPG's collections have expanded, research into American political, social, and intellectual history and the history of American art has substantially increased. The products of this research include special exhibitions using the portraits in the NPG collections as well as those borrowed from elsewhere, and books and journal articles of enduring scholarly value. Temporary exhibitions in the Gallery frequently present subjects or artists never before explored, and bring together works from public and private collections for display with objects in the Gallery's permanent collections. Professional conservators on the Gallery's staff care for the collections of the National Portrait Gallery.

The Gallery has maintained an active and successful program in recent years without substantial increases in budget or staff. As the 1990s begin, the Gallery will face new challenges in maintaining its acquisition activity in the face of increasing art prices, housing its collections in an orderly and safe manner, and managing its records. The Gallery will require additional funding to support its growing collections and necessary expansions in its curatorial, registrarial, and educational programs.

Collections Acquisitions - During FY 1989, several significant acquisitions enhanced NPG's collections.

Sculptures and Paintings: Through purchase, the Gallery acquired Cephas Thompson's portrait of William Wirt, U.S. attorney general for 12 years in the Andrew Jackson administration, as well as busts of the writers A. Bronson Alcott and J. P. Marquand and a bronze bust of former Institution Secretary S. Dillon Ripley by Walker Hancock. NPG also accessioned painted portraits of Gertrude Stein with Alice B. Toklas by Sir Francis Rose, and the artists Jacob Epstein, Ernest Lawson, Mark Tobey, and Thomas Seir Cummings.

A bronze bust of President George Bush by sculptor Marc Mellon augmented the NPG Presidential portrait collection. The bust was a gift from Vincent and Sheila Melzac. A second major gift to the collection was a portrait of Bishop George Berkeley. Acquired through a grant from the Morris and Gwendolyn Cafritz Foundation, the portrait has special significance, not only because it dates from the time when Berkeley was attempting to carry out his New World plan, but also because it was the work of colonial artist John Smibert, who accompanied Berkeley to America as the artist designated to teach painting and drawing at the Bermuda school. Other important gifts include the Rene Bouche portrait of Benny Goodman from Mr. Goodman's daughters and three self-portraits in different media by Victor Hammer.

Prints and Drawings: The Prints and Drawings Department acquired a number of significant portrait drawings in FY 1989, including Sally Avery's drawing of Milton Avery; Boardman Robinson's image of John Reed; self-portraits by Theodore Roszak and Stanton MacDonald-Wright; an English watercolor of Edward Sothorn; pencil drawings by Miriam Troop of James Farrell, Howard Rusk, A. Philip Randolph, Joseph Hirshhorn, and Ellsworth Bunker; and crayon portraits by Hugo Gellert of Ethel and Julius Rosenberg,

Mary Heaton Vorse, Gilbert Grosvenor, and others. The Gallery also added to the collection several groups of caricature drawings, including four works by Charles Johnson Post, 11 drawings by Peggy Bacon, six by Antonio Sotomayor, eight by Will Cotton, and 33 by David Levine, as well as one piece by Paolo Garretto. Several portraits of important African-American subjects now enhance the collection, including a lithograph of Henry Bibb, a drawing of Katherine Dunham, and posters of Jack Johnson and Dorie Miller. Other posters acquired include images of Alla Nazimova, Will Rogers, Veronica Lake, Lon Chaney, and John Gilbert. Among other major print purchases were a lithograph of Theodore Dreiser by Adolf Dehn, an etching of George Washington by Joseph Hiller, Jr., and a lithograph depicting Rouben Mamoulian by Don Freeman.

In addition to many smaller gifts to the collection, the Gallery received five drawings by Boris Chaliapin, a painted poster by Batiste Madalena, a pastel by Antonio Sotomayor, and a lithograph by Alexander Brook.

Photographs: Outstanding photographs purchased for the Gallery's collection in FY 1989 include a unique, life-size Polaroid Polacolor self-portrait of contemporary artist Lucas Samaras; a rare vintage print of Gertrude Stein and Alice B. Toklas taken in Stein's Paris home by Man Ray in 1923; a daguerreotype of future outlaw Jesse James at the age of three as well as a tintype portrait of the adult James from 1870; a vintage platinum print by Alice Boughton of poet and reformer Julia Ward Howe; a daguerreotype of artist Charles Loring Elliott attributed to Matthew Brady; a handsome, vintage portrait of artist Louise Nevelson by Lotte Jacobi; Paul Haviland's rare, cyanotype portrait of photographer Alfred Stieglitz from 1910; an informal view of photojournalist Arthur Fellig (better known as "Weegee") by news photographers Bert Brandt and Edward Jerry; and a dramatically posed, vintage silver print of evangelist Aimee Semple McPherson taken at the Gerhard Sisters' studio in St. Louis in 1923. "The Family," a limited edition portfolio of 73 portraits by Richard Avedon, commissioned by Rolling Stone magazine, depicts the men and women who constituted America's political leadership in 1976. Generous contributions from Mrs. J. Paul Austin and the James Smithson Society funded the acquisition of the Avedon photographs.

Several gifts also enhanced the Gallery's photographic holdings in FY 1989. A gelatin silver print of author Lillian Hellman by Marianne Cook joined the collection as a gift of the photographer, while an anonymous donor gave a portrait of author James Jones by Nancy Crampton. A 1948 vintage portrait of public official David E. Lilienthal came as a gift from the family of Mr. Lilienthal.

Collections Management - In the summer of 1989, NPG undertook an extensive drawings conservation inventory to review the housing and conservation needs of framed drawings. This project has been pending since the transfer of drawings to the Prints and Drawings Department several years ago. In the course of the inventory, NPG has rehoused a large number of drawings, identified several conservation emergencies, and made plans for the systematic rehousing and reframing of the majority of drawings.

The registrar's office continues to settle into its new office spaces. It has started reorganizing exhibition and outgoing loan files and will receive cabinets for this project in FY 1990. The registrar's office continues to expand its use of microcomputers. NPG uses computer data bases to monitor pending acquisitions in its custody, to record outgoing loans, to track the location of objects on view in the museum, and to create completed catalogue cards. Museum staff routinely enters new collections records in the data base. In-house automation of older inventory records

continues to be a priority. Meanwhile, the Gallery relies on the Smithsonian's central computer for its complete collections records.

NPG renovated the packing and shipping room in FY 1989 to make maximum use of the available space. Card readers at entrances to collection storage areas within the Museum and in other "sensitive" workspaces now enhance security of these areas. The Museum is researching space-efficient cabinets, and a vendor will make recommendations within the next year.

Exhibitions - The National Portrait Gallery and the Museum of Broadcasting in New York co-organized "Pioneers of American Broadcasting" in October 1988. The exhibition featured inventors, entertainers, writers, and newscasters who had a significant impact on radio and television history. In addition to portraits and memorabilia, the exhibition included excerpts from radio and television programs played on monitors located throughout the galleries.

As part of its celebration of the Bicentennial of the Constitution, the Gallery joined the United States Senate and the United States House of Representatives in presenting "The First Federal Congress, 1789-1791," from March through July 1989. Senator Robert Byrd, Representative Lindy Boggs, and Smithsonian Secretary Robert McC. Adams opened this exhibition at a special reception attended by many members of Congress.

To commemorate the 200th anniversary of the Act of Congress establishing the Federal judiciary system, "Portraits of the American Law" opened in October 1989. This exhibition featured images of distinguished American jurists from the years of the early republic to the late 20th century. The primary purpose of this exhibition was to highlight those individuals who were pivotal interpreters and shapers of the U.S. legal system. Three national law firms provided partial support for the exhibition: Morgan, Lewis & Bockius, Vinson & Elkins, and Kirkland & Ellis.

"Isamu Noguchi Portrait Sculpture," the first major retrospective of this important but little-known aspect of the artist's work, opened in April 1989. Favorably reviewed in the national press, this exhibition went to a branch of the Whitney Museum in New York after its Washington closing in August.

"To Color America: Portraits by Winold Reiss" opened October 27, 1989 and will continue through April 1, 1990. It features images of various ethnic groups, particularly African Americans and native Americans, by the German-born artist, Winold Reiss. The Gallery has created a new exhibition area for this show by using a first floor central hallway and several adjacent rooms. The Smithsonian Institution Traveling Exhibition Service (SITES) will tour a panel version of this show.

Two major photographic exhibitions will open in the spring of 1990. The first is a joint exhibition with the National Museum of American Art (NMAA) of the 120 master photographs given to the two museums by Irving Penn. NPG and NMAA are developing plans to circulate this exhibition in the United States and abroad. The second is a selection of the photographic treasures from the National Portrait Gallery collection.

In late spring and summer of 1990 the Gallery will open several smaller exhibitions: "Oliphant's Presidents" will feature 25 years of presidential caricature by Pat Oliphant, and "Working for TIME" will feature 22 portraits done for the cover of TIME magazine by Robert Vickrey. "The Five of Hearts," opening in June 1990, will

feature the 1880s friendship of Henry Adams, his wife Clover, John and Clara Hay and Clarence King.

The last in the Gallery's series of exhibitions commemorating the Bicentennial of the Constitution will open in November 1990. Co-organized with the Tennessee State Museum in Nashville, this exhibition will focus on the executive branch of government through an examination of the life and presidency of Andrew Jackson. The exhibit will travel to Nashville in February 1991.

Other major exhibitions currently under development are an exhibition focusing on the artists and journalists who covered World War II (1993), a joint exhibition with the Wadsworth Atheneum in Hartford, Connecticut, and the Amon Carter Museum in Fort Worth, Texas, on the portraits of Ralph Earl (1991), and a major retrospective of the works of Cecilia Beaux (1992). NPG is planning two exhibitions as part of the Columbus Quincentenary observance. In the first exhibition, NPG is joining with the Prado Museum in Madrid and the Kimbell Art Museum in Fort Worth, Texas, in organizing an exhibition of 16th-century Spanish portraiture. The exhibit will focus on the creation of an indigenous Spanish portrait style from the time of Ferdinand and Isabella through the age of Philip II, the era when Spanish colonial influence in the Western Hemisphere was at its height. Many European museums will loan their portrait masterpieces for this exhibition. For the second Quincentenary exhibition, NPG joins the National Museum of American Art to present, in the spring of 1993, an exhibition based on the American paintings and sculptures originally shown in the 1893 World's Columbian Exposition in Chicago.

Loans from the National Portrait Gallery to museums around the world continue to increase. Due to the many international celebrations of the 150th anniversary of photography, loans from that collection have been particularly heavy, with items going as far as Czechoslovakia and Australia.

Publications - The National Portrait Gallery's publications department produces books and ephemera documenting the museum's collections and exhibitions for a general adult reading public. Exhibitions have been the focus of this activity in 1989, most notably with the publication of The First Federal Congress, an in-depth study of this landmark in history. This department has also completed, or initiated, work on four other exhibition-related books and various brochures. The Smithsonian Institution Press is distributing all but one of the books--Portraits of the American Law--which, in a new venture for the National Portrait Gallery, the University of Washington Press will distribute.

Of special interest in 1990 will be the catalogue for the Irving Penn photograph collection, produced to document the artist's gift to the National Portrait Gallery and the National Museum of American Art. This will be a collaborative project between the two museums, and the Smithsonian Institution Press will distribute the catalogue.

Education - The education department of the National Portrait Gallery combines a schedule of daily gallery tours, intensive elementary and secondary school programs, and senior citizen outreach programs. Trained education aides and docents conduct these tours and outreach programs. NPG's education program menu includes interactive school presentations such as "Westward Ho!" and "Posing for the Presidency," tour and slide-lecture presentations, and musical performances such as "Lerner and Loewe Remembered." NPG has developed programs to address the needs and interests of multi-cultural communities nation-wide and to broaden audiences locally. As part of the Institution's Special Employment Initiative, funding for a position of public programs

coordinator was provided in FY 1990. This position assists NPG in developing and coordinating programs of symposia, lectures, films, and performances to appeal to multiple audiences.

"Cultures in Motion: Portraits of American Diversity" (CIM) promotes reexamination of portraiture, biography, and history through lectures, symposia, one-person biographical plays, recitals, concerts, storytelling, and other performance media. A successor to the former "Portraits in Motion," CIM's activities are a constructive way for museum visitors to broaden their understanding of the multi-cultural views of American history.

A brochure of adult outreach services developed by NPG invites "mobile seniors" to spend a morning or an afternoon at the National Portrait Gallery. The goal is to reach older adults living within two hours of the District of Columbia. NPG is conducting further research to develop supplemental education packages for teachers nation-wide and a self-guiding brochure of the museum for families with young children. NPG must complete the development work and acquire funding to produce these new publications.

The education department offers "Lunchtime Lectures" related to the Gallery's special exhibitions and highlights the permanent collection through slide-lectures on themes such as "Leading Ladies: Women and Reform in the United States" and "Men of Progress: Nineteenth-Century American Inventors." The department is also responsible for coordinating the National Portrait Gallery's internship program.

Research - The Catalog of American Portraits (CAP) continued to serve researchers in the fields of American history and American art history during FY 1989. Research requests increased in number and complexity over previous years. CAP added portrait records from the Midwest and California to its computer data base, bringing the total number of automated records to approximately 54,000. Participating institutions received automated printouts and accompanying negatives covering their portrait collections. CAP researched and updated information on some 6,000 portraits in the southern United States.

In cooperative research efforts with other Smithsonian museums, NPG shared information in the CAP concerning approximately 2,500 portraits of native Americans with the National Museum of Natural History's native-American programs and assisted the National Museum of American History's Division of Military History in the study of military uniforms as depicted in 18th- and 19th-century portraits. The Smithsonian Institution Collections Information System (CIS) will incorporate information from these research projects. CAP continues to play an active role in the development of this information system.

CAP's first priority in FY 1990 is to continue to serve research interests, both professional and private. Having filled two office vacancies (including a new field surveyor) in FY 1989, CAP expects greater progress in the collection and processing of research material. CAP will continue to seek funding for the completion of the national portrait survey.

During FY 1989, the Peale Family Papers staff continued its work of transcribing, researching, and annotating the selected papers of the noted artist and naturalist Charles Willson Peale and his artist-sons Raphaele, Rembrandt, and Rubens. The staff has submitted volume 3, The Belfield Years: 1810-1820 to Yale University Press, with publication scheduled for April 1991. Work has begun on volume 4, which will cover

the years 1820-1827, and on Charles Willson Peale's autobiography (volume 5), both scheduled for publication in 1993. The University of Pittsburgh Press will publish a volume of critical essays entitled Charles Willson Peale: New Perspectives to appear in April 1991 in celebration of the 250th anniversary of the artist's birth.

The project's research program to identify portraits painted by Rembrandt Peale (1778-1860) and to collect information about the extensive work of this important American artist is successfully under way. Publication of the catalog raisonné of Rembrandt Peale's oeuvre will provide a scholarly resource for art historians. An exhibition of Rembrandt Peale's portraits will follow the completion of the catalogue.

The National Museum of American Art/National Portrait Gallery Library continues to provide a full range of services to its readers. An unusually large number of fellows and interns used the Library during FY 1988 and FY 1989. In addition, the Library gave tours and orientations to groups both within the Smithsonian and outside.

The Library staff has almost completed a full stack inventory in preparation for the automated circulation system due to begin in FY 1990. The staff also has developed an automated system for tracking interlibrary loans and produced a detailed guide to Library policies and procedures that will be distributed to Smithsonian staff and fellows. To help develop a program to improve the publication exchange project, the Library staff received a Research Opportunities Fund grant.

At the "Periodicals Swap" at the Annual Conference of Art Libraries Society/North America in Phoenix in March 1989, the Library obtained many important missing periodical issues. Other additions to the Library collection in FY 1989 included the New York Public Library Artists' File (microfiche), American Biographical Archive (microfiche), New York Evening Post, 1829-1871 (microfilm), and The Nineteenth Century: The Visual Arts, and Architecture Specialist Collection (microfiche).

The Library's Bibliography on Portraiture will be published by G. K. Hall in 1990. This printed book catalogue lists books, book chapters, periodical articles, and selected monographs on portraiture. Covering portraiture as both an art form and documentation in all epochs of civilization, it will serve the needs of scholars and institutions here and abroad. A project to fund the archival processing and indexing of the Ferdinand Perret Papers, a scrapbook collection on California art and artists, is in the proposal stage. The Library is eagerly awaiting the publication of the NPG checklist on CD-ROM. The CD-ROM reader will be located in the Library for various uses by the Gallery.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, NPG requests an increase of \$25,000 for support of the Columbus Quincentenary exhibitions. The 1992 Columbus Quincentenary presents a once-in-a-lifetime catalyst for American scholars and the public to explore the founding of the Americas. Of all the historical records available from the 15th and 16th centuries, the medium that can speak most vividly to many contemporary audiences is portraiture from that era. The collections of the National Portrait Gallery are among the richest assets of the Nation's art and history collections. NPG will contribute its extensive collections and unique expertise in the fields of portraiture, exhibition organization, and publication direction to the Quincentenary celebration by focusing on the people of that era whose decisions and accomplishments have in turn shaped the 20th century.

NPG will present two exhibitions and two research publications to commemorate the Quincentenary. The first involves a significant research initiative in collaboration

with two internationally important museums, the Kimbell Art Museum in Fort Worth, Texas, and the Prado Museum of the Ministry of Culture in Madrid, Spain. "Spanish Portraiture in the 16th Century" will feature portraits from the age of King Philip II, when Spanish colonial influence in the Western hemisphere was at its height. This exhibition will feature portraits on loan from the Prado in Spain, the Kunsthistorisches Museum in Vienna, Austria, and the British Royal Collections. This exhibition will be on view in 1992 in Washington, D.C., and in Fort Worth. NPG and its partners also intend for this exhibition to tour other venues, including Spain. The catalogue for this exhibition will appear in both English and Spanish. Funding needs will continue into FY 1993 as the exhibition travels to other venues. The second Quincentenary exhibition, "American Art at the 1893 World's Columbian Exposition in Chicago," involves significant new research in art history conducted by NPG and the National Museum of American Art. This exhibition, based on works originally shown in Chicago at the 1893 World's Columbian Exposition, will be on view in FY 1993.

The National Portrait Gallery currently has a base of \$15,000 to support these Columbus Quincentenary initiatives. The requested increase will provide an expanded base of \$40,000 to continue the research and planning for the two exhibitions. This expanded base will support the contractual services of a guest curator (\$20,000) and cover the extensive international travel necessary to find portraits appropriate for the exhibition and to arrange exhibition sites (\$20,000).

The nationwide series of events centered around the Columbus Quincentenary presents unique opportunities for international cooperation among institutions and scholars. With its own collections, and through its partnership with other preeminent museums, NPG will interpret the figures and events of the Columbian era and their subsequent impact on the historical and cultural developments of 20th-century America.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Several sources constitute the unrestricted general and special purpose funds, including the Gallery's share of sales in the museum shop, allotments, sales of photographic reproductions of portraits in the collection, staff honoraria, and participation fees from museums to which the National Portrait Gallery loans exhibitions. These funds help defray the costs of public lectures, symposia, and special events in coordination with the opening of exhibitions, the associated costs of loan exhibition development and management, and the research expenses of staff preparing special publications or lectures. In addition, funds from the Smithsonian's Collections Acquisition, Scholarly Studies and Educational Outreach Programs, Research Opportunities Fund, Women's Committee, and Special Exhibition Fund support research, education, and exhibition projects.

Restricted Funds - Designated for specific purposes, these funds are in the form of gifts and grants from individuals, foundations, organizations, and corporations.

In FY 1989, the Gallery received a generous grant from the Morris and Gwendolyn Cafritz Foundation to purchase a painting of Bishop George Berkeley. The Gallery purchased other acquisitions, notably a portrait of Thomas Seir Cummings by Augustus Earle, 73 photographs by Richard Avedon, a bronze bust of S. Dillon Ripley by Walker Hancock, and a portrait of Gertrude Stein and Alice B. Toklas by Sir Francis Rose, all from the contributions of Mrs. J. Paul Austin, the Barra Foundation, Inc., the T. M. Evans Foundation, Inc., Leslie H. Goldberg, Chester H. Lasell, and William Vareika.

The Kirkland & Ellis Foundation; Vinson & Elkins, Attorneys at Law; and Morgan, Lewis & Bockius, Counselors at Law, lent their support in 1989 to NPG's "Portraits of American Law" exhibition. The Bicentennial Commission of the U.S. Constitution, Donaldson, Lufkin & Jenrette, Inc., and the Equitable Life Assurance Society of the United States have made generous contributions in support of the Gallery's ongoing exhibition programs. The Burlington Northern Foundation and the Anschutz Foundation made donations in support of "To Color America: Portraits by Winold Reiss" an exhibition that opened in late October 1989. The Gallery has also received generous gifts from the New Sweden '88 New York Committee, the New York Community Trust, and the Ruth and Frank Stanton Fund. The Gallery has received a number of smaller gifts from individual donors.

The extent and degree of outside support in the coming fiscal years cannot be projected, but fundraising is actively under way for several major projects in FY 1991 and 1992.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	72	3,453	-	14	-	838	-	1,849	-	-
FY 1990 -Estimate	78	3,508	-	20	-	485	-	1,598	-	-
-Base	78	3,578								
FY 1991 Estimate	78	3,678	-	27	-	75	-	1,666	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	78	0	78
11 Personnel Compensation.....	2,250	58	2,308
12 Personnel Benefits.....	398	12	410
21 Travel.....	70	0	70
22 Transportation of Things.....	150	0	150
23 Rent, Communications & Utilities.....	10	0	10
24 Printing & Reproduction.....	40	30	70
25 Other Services.....	175	0	175
26 Supplies & Materials.....	180	0	180
31 Equipment.....	150	0	150
Collections Acquisition.....	145	0	145
41 Grants.....	10	0	10
Total	3,578	100	3,678

Analysis of Increase

Necessary Pay.....	70
Program Funds.....	30

ABSTRACT - Public Law 89-788, signed on November 7, 1966, established the Hirshhorn Museum and Sculpture Garden (HMSG) as the Smithsonian's modern and contemporary art museum. The collection is the basis of an active program of

exhibitions. The Museum staff conducts extensive research, prepares catalogues, and offers a variety of educational activities.

For FY 1991, the Hirshhorn Museum and Sculpture Garden requests an increase of \$30,000 to provide expanded support for its Quincentenary exhibition "Four Latin-American Modernists: Torres-Garcia, Rivera, Lam, and Matta." The Institution requires \$70,000 for necessary pay for existing staff funded in this line-item.

PROGRAM - In keeping with its status as a museum of modern and contemporary art, HMSG conducts programs of research, exhibitions, collections management, acquisitions, deaccessions, and educational activities involving audiences of all ages. First opened to the public on October 4, 1974, the Museum attracts more than one million visitors a year, making it one of the most visited contemporary art museums in the United States.

Research - The Museum's resources include more than 13,000 works of art, a curatorial file providing information on artists and works in the collection, and a library with 35,000 books and catalogues. Students and researchers can view and study works of art not on display. The staff researches the provenance, exhibition history, iconographic significance, and physical condition of each work of art in the permanent collection. The staff also conducts extensive research in preparing exhibitions. A computer system gives access to collection information and recalls video images installed on the system.

Exhibitions - The Museum conducts an active exhibition program that draws upon works in its collection and other collections. Nearly 700 works from the permanent collection are on display at any one time. The Museum makes extensive loans to other museums.

In FY 1989, the Museum organized four major exhibitions: "Alberto Giacometti, 1901-1966"; "Recent Acquisitions 1986-1988"; "Robert Moskowitz: 1959-1989"; and "Francis Bacon." In the same fiscal year, the Museum displayed "Gerhard Richter: Paintings," an exhibition organized jointly by the Art Gallery of Ontario and the Museum of Contemporary Art, Chicago. After its initial showing at HMSG, the Giacometti exhibition traveled to the San Francisco Museum of Modern Art. The Moskowitz show will travel to the La Jolla Museum of Contemporary Art and the Museum of Modern Art, New York. The Bacon exhibition will travel to the Los Angeles County Museum of Art and the Museum of Modern Art, New York.

For the second year, the Smithsonian's Special Exhibition Fund partially supported two exhibition programs: "Directions" and "Works." The "Directions" series featured Austrian artist Walter Pichler, Chinese-American artist Mel Chin, and American artists Erica Beckman and Keith Sonnier. Each exhibition was accompanied by a small catalogue. The innovative "Works" program integrates the Museum's building and grounds into the creative process. HMSG commissions artists to visit the Museum and create temporary site-specific works. "Works" artists in FY 1989 included Krzysztof Wodiczko, Daniel Buren, Buster Simpson, and Houston Conwill. During the exhibition, HMSG provides a free handout detailing the artists' styles. Each year the Museum produces a catalogue of "Works" exhibitions which is sold in the museum shop.

During FY 1989, the Museum's staff also organized small exhibitions based on the permanent collection: "Numbers, Letters and Lines"; "Thomas Eakins Photographs: A Selection from the Permanent Collection"; and "Ralston Crawford Photographs."

In FY 1990, HMSG will show two major exhibitions: "Culture and Commentary: An Eighties Prospective" and "Bay Area Figurative Art, 1950-1965." "Culture and Commentary" surveys the art of the 1980s by highlighting 15 artists from Europe, Canada, and the United States whose expressive voices have fully developed in this decade. HMSG will ask a number of artists to create site-specific works for this exhibition. The San Francisco Museum of Modern Art is organizing the "Bay Area Figurative Art, 1950-1965" exhibition.

In FY 1991, major exhibitions scheduled include "John Baldessari," organized by the Los Angeles County Museum of Art; "Sigmar Polke," organized by the San Francisco Museum of Modern Art; and the American Visual Arts Exhibition, "-X."

Collections Management - HMSG inventories its entire collection on a three-year cycle, with spot checks made at least annually. Work continues on integrating the bequest of Mr. Hirshhorn into the permanent collection. The staff develops object records and examines objects. Staff photographers record the objects for both identification and reproduction purposes. The office of the registrar is transferring the permanent inventory from the Institution's old mainframe computer to the new mainframe. This office also is working to add video images to the inventory system.

Acquisitions - The function of HMSG, as described in the legislation, is to be "a museum in Washington, D.C. where modern art could be exhibited and studied...[to]...enrich the culture of the Nation." To reflect current developments in the visual arts, an active acquisitions program is essential.

In FY 1989, the Museum purchased the following: Eva Hesse's Vertiginous Detour (1966); Leon Kossoff's Between Kilburn and Willesden Green, Autumn (1987); Jean Tinguely's The Sorcerer (1961); Louise Bourgeois's The Blind Leading the Blind (ca. 1947-1949); Manuel Neri's Untitled (1981); and, Anish Kapoor's At the Hub of Things (1987).

The Museum periodically reviews its collections to identify works of art that it judges to be duplicates or non-contemporary art. The Museum's Board of Trustees must approve all requests for deaccessioning. Before deaccessioning works of art to the public, at auction, HMSG offers these works for sale to other museums of the Smithsonian Institution. According to the agreement with Mr. Hirshhorn, the Hirshhorn uses proceeds from any such sales to purchase new works of art.

Education and Public Orientation - To help visitors understand modern art HMSG creates a variety of educational materials. These include brochures and mini-catalogues distributed to the public free of charge. The education department trains docents to lead regular and special tours of the exhibitions. This department also programs the Orientation Room with both original creations and outside productions. HMSG's outreach programs assist visitors before they arrive at the Museum. In 1988, the Museum developed new outdoor signs to inform passersby of the current major exhibition.

The Museum sponsors three free film series: a lunchtime series about artists and their work; an evening series by artist film makers; and a Saturday series for young people. Other events held in the Museum's auditorium include concerts by the 20th Century Consort and lectures by artists, critics, and art historians. Occasionally, a symposium accompanies a related exhibition.

"Currents," a program of two free seminars, exposes high school juniors to the trends and ideas represented in new works of art. The students' comments and observations are printed in a free handout for the public.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the Hirshhorn Museum and Sculpture Garden requests an increase of \$30,000 to provide expanded support for its Quincentenary exhibition "Four Latin-American Modernists: Torres-Garcia, Rivera, Lam, and Matta." The 500th anniversary of Christopher Columbus's voyages provides all Americans with an opportunity for expanded international cultural understanding. The increased public awareness and respect of other cultures promoted by this event will build a long-term foundation for encouraging international cooperation and scholarly exchange with Latin America.

The exhibition "Four Latin-American Modernists: Torres-Garcia, Rivera, Lam, and Matta" is HMSG's contribution to the Smithsonian Institution's celebration of the Columbus Quincentenary. It aims to broaden public understanding of the Latin-American culture and, in particular, the impact of four Latin-American artists on modern art. By focusing on Diego Rivera, Joaquin Torres-Garcia, Wifredo Lam, and Matta, the exhibition examines their aesthetic merits and distinctive styles that eventually moved beyond modernism. The Hirshhorn Museum's exhibition in conjunction with the Columbus Quincentenary will provide insight on Latin-American culture and art.

The requested increase for FY 1991 will partially pay the costs of writing and editing an exhibition catalogue.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds come from several sources including the Museum's share of sales in the museum shop, plaza cafe, and other miscellaneous receipts. An allotment meets the travel expenses of the Museum's Board of Trustees. The 20th Century Consort, which has performed at the Museum for more than ten years, receives partial funding.

Restricted Funds - The Hirshhorn Museum and Sculpture Garden has four endowment funds. The first fund comes from the \$1 million that Mr. Hirshhorn pledged at the signing of the initial agreement, and the second comes from the monies left to the Museum in his will. The third endowment comes from the sale of works of art. Finally, the Museum receives funds from the Hohenia Trust, a Swiss foundation financed by Mr. Hirshhorn. The Museum can use these four funds only to purchase works of art. At the beginning of each year, the Museum's Board of Trustees has authorized 10 percent of the value of the endowment funds for use as a purchase fund for the current year.

Also, individuals, foundations, organizations, and corporations designate gifts and grants for specific purposes. Generous grants from the Xerox Corporation and Credit Suisse provided partial support for the Giacometti exhibition. In addition, Balair supplied air transportation from Switzerland and the Pro Helvetia Foundation contributed funds for the brochure and a symposium.

ARTHUR M. SACKLER GALLERY/FREER GALLERY OF ART

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	61	4,296	1	88	-	248	23	3,126	-	-
FY 1990 -Estimate	68	4,331	1	94	-	-	23	3,210	-	-
-Base	68	4,400								
FY 1991 Estimate	68	4,668	1	96	-	-	23	3,035	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base <u>FY 1990</u>	Proposed <u>Adjustments</u>	Est. <u>FY 1991</u>
FTE Allocation.....	68	0	68
11 Personnel Compensation.....	2,179	51	2,230
12 Personnel Benefits.....	543	17	560
21 Travel.....	34	0	34
22 Transportation of Things.....	14	0	14
23 Rent, Communications & Utilities.....	39	0	39
24 Printing & Reproduction.....	205	0	205
25 Other Services.....	371	160	531
26 Supplies & Materials.....	484	40	524
31 Equipment.....	440	0	440
Collections Acquisition.....	91	0	91
Total	4,400	268	4,668

Analysis of Increase

Necessary Pay.....	68
Program Funds.....	200

ABSTRACT - The Arthur M. Sackler Gallery, established in 1982 and the Freer Gallery of Art, established in 1906, research, exhibit, acquire, care and manage collections of Asian art in each museum. In addition, the Freer collections contain a collection of American art by artists whose work was greatly influenced by Asian art. These two museums support complimentary programs. In exhibitions, the Freer Gallery cannot lend or borrow collections, but the Sackler Gallery can exhibit its own collections, as well as shows organized by other institutions. In addition, the

Sackler may lend objects from its collections. Collections acquisition for both museums is not duplicative but complementary, providing the fullest possible resources to draw upon for original research and exhibitions about, and preservation of, the cultural heritage of Asia.

For FY 1991, the Arthur M. Sackler Gallery/Freer Gallery of Art requests an increase of \$200,000 as no-year funding for reinstallation of the Freer collections in the exhibition galleries following the building renovation currently in progress. The Institution requests that this increase for the reinstallation of the Freer exhibition galleries be available until expended. The Institution requires \$68,000 for Necessary Pay for existing staff funded in this line-item.

ARTHUR M. SACKLER GALLERY:

PROGRAM - The goal of the Arthur M. Sackler Gallery is to expand knowledge and appreciation of works of art from Asian countries, and of the human and physical contexts from which works of art emerge, through exhibitions, research, publications, and public programs. Toward this end, Dr. Arthur M. Sackler gave to the Nation a collection of almost 1,000 objects in the fields of Chinese, Indian, Southeast Asian, Near Eastern, and Japanese art. This collection now includes Chinese jades spanning a period from Neolithic times (5000-1500 B.C.) into the 19th century; Chinese bronzes from the Shang (ca. 1523-ca. 1028 B.C.) through the Han (206 B.C.-A.D. 220) dynasties; Chinese paintings; Chinese lacquer; Near Eastern ceramics and metalwork; sculpture from Cambodia, India, and Thailand; and Japanese paintings, lacquer, ceramics, and prints.

Research - Research undertaken by both visiting scholars and the Gallery's curatorial and conservation staff provides the basis for exhibitions, publications, and collections acquisitions. In addition, the Sackler disseminates research results through a variety of public programs, including lectures by members of the curatorial staff on subjects of current research. Guest lecturers focus on topics related to Asian art and culture.

Exhibitions, exhibition catalogues, and scholarly papers and articles result from specific research projects. The Gallery's publications program also includes a quarterly magazine, Asian Art, written for general understanding. Produced in cooperation with Oxford University Press, it features color plates and an informative text relating to various research activities, the permanent collection, recent acquisitions, and special exhibitions. Also, the Gallery publishes free leaflets and gallery guides for the public.

Research in the area of conservation concentrates on the lead-isotope ratio analysis of Chinese bronzes in the Sackler and other collections and on the extension of identification methods into the field of organic colorants in paintings.

As a joint effort, the Freer and Sackler received a Scholarly Studies grant to study the ancient Near Eastern metalwork collections in both museums. The Sackler received a Scholarly Studies grant for research on Chang Dai-chien, the 20th-century Chinese artist to be featured in an exhibition at the Sackler in 1992.

Exhibitions - Exhibitions are another major focus of the Sackler Gallery. During the past year, several inaugural exhibitions continued to display portions of the initial Sackler gift, together with other objects on loan from the estate of Dr. Arthur M. Sackler. The inaugural exhibitions that remained during FY 1989 were

"Monsters, Myths, and Minerals," "Temple Sculptures of South and Southeast Asia," and "Chinese Buddhist and Daoist Imagery."

Besides the continuation of these popular inaugural exhibitions, several new exhibitions, mostly organized by the Sackler staff, opened to the public in FY 1989. They included "Recent Japanese Acquisitions," October 1988; "A Jeweler's Eye: Islamic Arts of the Book from the Vever Collection," November 1988; "Photographs of Afghanistan," April 1989; "Timur and the Princely Vision: Persian Art and Culture in the Fifteenth Century," April 1989; "Yani: The Brush of Innocence," June 1989; "The Noble Path: Buddhist Art from South Asia and Tibet," November 1989; "India Along the Ganges: Photographs by Raghubir Singh," December 1989; and "Ancient Chinese Bronzes and Jades," December 1989.

The Sackler will continue to originate and borrow exhibitions drawn from international public and private collections and from the Sackler Gallery collection. Many Sackler-organized exhibitions will travel to other museums and institutions. Future exhibitions include "Yokohama Prints from the Leonhart Collection," "Indonesian Court Arts," "Masterpieces of the Che School of Painting," "Paintings by Chang Dai-chien," "Selections from the Vever Collection," and "Mughal Gardens."

The Sackler plans additional exhibitions on Chinese mirrors, Ordos bronzes, Chinese lacquer, Chinese garment hooks, Indian paintings from private collections, Sasanian metalwork, Chinese furniture, Near Eastern ceramics, Far Eastern ceramics, and Chinese sculpture. When funded, research catalogues will accompany the exhibitions.

Conservation - The Sackler Gallery must protect and conserve the art objects under its purview. This responsibility includes the objects in the permanent collections, in loan exhibitions held at the Sackler, and in Sackler-organized traveling exhibitions. The Sackler conservation effort includes object research to understand the origins of objects and thereby better develop the proper treatment of them. Expansion of the conservation facilities in the renovated Freer Building will also accommodate the requirements of the Sackler programs. The staff of the conservation laboratory have concentrated on particular items for future exhibitions, such as Buddhist and Tibetan sculpture. The staff also monitors environmental control of Sackler exhibition galleries and collections storage areas. The Freer Gallery of Art section of this narrative discusses the East Asian Painting Conservation Studio, which conserves Sackler collections as well.

Education - The Sackler Gallery attracts a large number of research scholars and has an active program of research fellowships and internships. Recipients work closely with curators on topics related to the collections. A grant from the Rockefeller Foundation established a Residency Program in the Humanities at the Smithsonian Institution. The Institution has awarded two to three postdoctoral appointments in Asian and African art (to the Sackler Gallery and the National Museum of African Art) each year since 1985. The Rockefeller Residency Program differed from existing fellowship programs in that it allowed the fellows to become directly involved in the plans and programs of the museums and to participate in symposia, exhibitions, and publications. Similar scholarly grant programs will advance the research and education programs based on Asian art collections and exhibitions at the Sackler.

The Sackler Gallery is developing an active educational program for local elementary, secondary, college, and university students. Programs allow students at

secondary, undergraduate, and graduate levels and visiting researchers to participate in symposia and seminars, at which they come into direct contact with major works of art and distinguished scholars and curators. Topics of such symposia and seminars relate to current exhibitions, the Sackler collections, or some aspect of Asian art and culture.

Education programs during FY 1989 included weekly storytelling for children and adults; children's guides to exhibitions; hands-on experience in the galleries with noncollection items similar to exhibited artwork; workshops for children, adults, and teachers; special tours for specific age groups; films; musical concerts; lectures both in English and an Asian language; and other Asian cultural events. Gallery guides for every exhibition provided information that supplemented exhibition labels.

Educational outreach continued through a program for the elderly and the young. Docents gave illustrated slide lectures to community groups. Previsit education packets sent to schools prior to tours of the Sackler Gallery introduced specific areas of Asian art. Education staff furthered outreach expansion through an Asian-American community study. The "Noble Path" exhibition incorporated ideas that surfaced through the study.

Collections Acquisition - The Sackler Gallery continues to acquire art objects for the permanent collection, that are of central interest to the museum, including the arts of Asia in its broadest terms, from Japan to the Near East. Objects acquired for the collection will be of high quality in terms of aesthetic standards, cultural history, and physical condition. The Sackler Gallery acquires objects by gift, bequest, or purchase, provided that the objects meet established acquisition criteria.

While the Sackler Gallery does not have a Federal base for collections acquisition, the sale of merchandise at the Sackler museum shop provides modest Trust funds for this purpose. In FY 1989, purchases with these Trust funds included four Chinese paintings by Kung Hsien (ca. 1617-89) and a Chinese painting by Wen Zhengming (1470-1559). Gifts to the collection in FY 1989 included an Indian hair ornament of gold and a photograph from Afghanistan. The Sackler received a Chinese painting dated 1890-1900 for the study collection.

FREER GALLERY OF ART:

PROGRAM - The Freer Gallery of Art houses one of the most distinguished collections of Asian art in the world. The collections consist of more than 27,000 works of art from China, Japan, Korea, India, and the Near East and span 5,000 years. Included are paintings, sculpture, Biblical manuscripts, and other objects in stone, wood, lacquer, jade, pottery, porcelain, bronze, gold, and silver. The Peacock Room, by James McNeill Whistler, is part of an outstanding collection of late 19th- to early 20th-century American art that Charles Lang Freer, the Gallery's founder, considered a bridge between the arts of the East and West. The Freer shares with the Sackler Gallery a library of approximately 47,000 volumes relating to the objects in the collections, open to the public for reference.

Although extensive renovations closed the Freer to the public in the fall of 1988, research, conservation, collections management, authentication services, and other such activities continue. During the renovation, collection items are available for study by appointment in the temporary collections storage areas. The Freer will reopen in late 1992, after the completion of the tunnel to the Sackler Gallery.

The unique Asian collections in the Freer Gallery, together with notable holdings of American paintings, have made the museum an increasingly important center for students, scholars, and the public. With the Freer's reopening, museum tours, the Freer lecture series, and all other public programs will be available in an enhanced format as a result of the expanded and improved facilities the renovation makes possible.

Research - The Freer's primary area of focus is research. Freer Gallery research facilities--including the collections, curatorial staff, library, and technical conservation laboratories--form the nucleus of its specialized efforts. Research findings are available to the public through exhibitions, catalogues of exhibitions, articles, object files, free gallery leaflets, and public lectures at the Freer and at other similar institutions. Updating the research files on individual pieces in the collection continues during the renovation, as well as automation of collections records. These files and the collections in storage are available to visiting scholars and students.

Although the results of curatorial research are most visible in the Freer's exhibitions, the Freer also disseminates research results to the public through collections research records, lectures, and published papers and books, activities that continue while the exhibition galleries are closed to the public for renovation. During the renovation period, the Freer also plans to publish books on the Che School, Tryon, Seto-Mino wares, and a revised version of the catalogue, Chinese Figure Painting. Originally published in 1973 and out of print since 1978, this catalogue was the only study in its field. Revision of this text for publication required a comprehensive review of all literature written on the subject during the past 16 years, including scholarly developments based upon the original publication.

Exhibitions - During FY 1990, preparations continue for the 1992 reopening exhibitions which will feature the finest pieces in the Asian and American collections. As part of the planning process, continuing research on Charles Lang Freer and the history of the Freer Gallery will provide significant information for the reopening exhibitions. The complete reinstallation will require a major commitment of resources during the next three years to prepare all 20 galleries and exhibition corridors in time for the Gallery's reopening.

Conservation - In addition to its reputation for conserving and restoring objects, the technical laboratory of the Freer and Sackler galleries is a renowned research facility. For the past several years a primary concern of the laboratory staff was conserving and storing the Freer collections and preparing exhibits for the extensive reinstallation. During renovation, the environmental conditions in the temporary storage areas located in the Freer require continual monitoring by conservators.

Conservation research identified particular organic colorants in paintings and tested Chinese bronzes for lead content to help determine their provenance. Other Freer research examined unusual copper-green pigments on Ukiyo-e paintings, lead-white on Japanese paintings, discoloration of lead-white pigments on Persian paintings particularly in the Vever Collection, pigment samples taken from excavated objects (A.D. 5th-8th centuries) in Korean museums, microscopic paper fibers from very small samples, and metallurgy and properties of high-tin bronzes, including reconstructing the alloy and production methods used in making high-tin bronze mirrors from Aramula, India. In addition, an analytical project on Chinese Buddhist bronze sculpture (A.D.

3rd-16th centuries) studied the provenance and bronze manufacture methods and how they relate to the history of Chinese bronze metallurgy.

The East Asian Painting Conservation Studio takes a more traditional approach toward conservation of East Asian paintings and screens than do Western conservation laboratories. The Studio uses traditional Japanese techniques, and the staff is considering using Chinese techniques on Chinese paintings. The Studio staff plans to train Americans in this specialized field to alleviate the critical shortage of skilled persons. Only three facilities in the United States currently restore and mount rare Far Eastern paintings and screens, and these facilities concentrate primarily on works for their respective museums.

Collections Acquisitions - In FY 1985, Congress established a Federal funding base for collections acquisition to the Freer Gallery. Recent acquisitions purchased with federal funds include a Japanese lacquer covered cosmetic box with maki-e and gold leaf decoration of the Tokugawa crest and chrysanthemum from Edo period ca. 1837 and an Indian mother-of-pearl plate dated from the Mughal period ca. 1650-1700. Purchases for the collections with FY 1989 Freer nonappropriated Trust funds included a Chinese painting from the Ming dynasty by Shen Chou. Eleven additional purchases with Trust funds are also pending approval before formal accession into the permanent collections. The staff is researching and classifying gifts to the Freer collections, including a Chinese ceramic bottle from the Ming dynasty, a Japanese dish from the Edo period, 25 Thai ceramics, 23 Vietnamese ceramics, and seven other Chinese ceramics.

Education - During FY 1989, the Freer Gallery carried out a wide range of research and scholarly activity that was available to the public through educational programs such as lectures. When the Freer reopens, educational materials available in the exhibition galleries will include a free introductory brochure for the visually impaired, free exhibition leaflets introducing various aspects of the Freer's collections, and docent-led tours. The education staff is developing these educational activities as well as new programs for the reopening.

Programs in place before the renovation will continue after the reopening. These include specific outreach programs that meet the needs of various groups such as the hearing and visually impaired. School and community groups studying specific aspects of Asian art may arrange tours of selected areas of the Freer. Docents will use customized slide sets when speaking to community groups. The education department will send special previsit education packets to schools before tours of the Freer Gallery. The need to expand outreach is a finding of the Asian-American Community Study.

Renovation Project - The Smithsonian initiated a major renovation of the Freer Gallery Building in 1988. The Gallery, closed to the public in the fall of 1988, will remain closed until the completion of the renovation and subsequent reinstallations of selections from the Freer collections in late 1992. The renovation project includes:

- construction of an underground gallery connecting the Freer and the Sackler to create an additional 3,200 square feet of exhibition space and provide convenient access for visitors and staff who oversee and use both galleries' collections;
- excavation and replacement of the Freer courtyard to create new space below the courtyard;

- construction of a passenger elevator from a ground-level lobby on the south side of the building to improve gallery access for mobility-impaired visitors;
- expansion of space for conservation activities and technical study of Asian and Near Eastern art, from 1,750 to 5,765 square feet;
- expansion of collections storage space for the Freer by 11,500 square feet, or 70 percent, to accommodate collections that have nearly doubled since the Freer opened in 1923.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the Freer Gallery of Art requests an increase of \$200,000 as no-year funding for reinstallation of the Freer collections in the exhibition galleries following the building renovation currently in progress.

The appearance of the Freer's exhibition galleries at the time of the reopening in 1992 is crucial to sustain the favorable public memory of the Freer before the renovation and to generate positive expectations of the future. The reinstallation of the Freer collections in the galleries must achieve the high standard of excellence in quality and content that has distinguished the Freer during its almost 70 years of public service.

The project calls for architectural millwork, the refurbishing of existing exhibition cases (most now more than 60 years old), props and seating, as well as for the construction of new cases and display devices, such as bases and pedestals. The project also requires the preparation and silk-screening of exhibition graphics, including case and wall labels; carpeting in exhibition areas; refurbishing the original grand hall light fixture; graphic illustrations and maps; and materials and supplies to support the installation of 20 galleries and exhibition corridors, totaling more than 25,000 square feet. Of particular concern in the reinstallation plans is increased security against vandalism, a disturbing development in the last year before closing the Freer. While security as a goal is unanimously accepted, there are a variety of solutions, with different aesthetic implications, that will be defined partly by the objects in question and partly by the financial resources available. A major consideration for the Freer is altering some traditional exhibition elements to improve accommodations for visitors with various physical and mental impairments.

Careful planning is essential for exhibit renovation, often requiring scheduling several years in advance for demolition, object selection and preparation, and installation. Because of current restrictions on specific funding, monies come from a variety of sources to pay for exhibit reinstallation. This further delays production. Because of the magnitude of the costs involved in exhibit revitalization and the requirement of multi-year planning, the Gallery requests that this funding (\$200,000) for reinstallation of the Freer exhibition galleries remain available until expended. This is unlike the remainder of the salaries and expenses appropriation for this line-item which is a one-year appropriation. The "Introduction" section of this budget contains a further justification for no-year funding. While the Institution expects the reinstallation to cost a total of \$3.0 million, the Gallery intends to raise one-half that amount privately. The Institution anticipates that it will request a second installment of funding for this reinstallation in its FY 1992 budget request.

The Freer Gallery of Art is the original national museum of Asian art and was the first Smithsonian museum devoted exclusively to the fine arts. Its reopening after

four years will be a very significant event, and support for this project must reflect that significance. A portion of the Freer renovations is a historic restoration, appropriate for a landmark building, and the reinstallation of the public galleries must complement the quality of the restoration.

Exhibitions in the new Sackler Gallery have quickly achieved a reputation for high standards of craftsmanship and imagination, enabling visitors to understand and appreciate the art on display. Financial resources must be sufficient to achieve the same quality at the Freer. With these resources, the Freer will also maintain the national and international reputation in outstanding research and exhibition it has established over more than six decades.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Annual allotments to the Freer Gallery of Art and the Arthur M. Sackler Gallery provide funds to defray the costs of special events associated with the opening of new exhibitions and to cover the travel costs for members of the Freer and Sackler's visiting committees. These funds also support the position of coordinator for special programs for the Freer and Sackler galleries. The proceeds from sales in the Sackler museum shop support the purchase of acquisitions, the publication of exhibition catalogues and gallery guides, the operation of the shop, and the undertaking of special projects.

The Sackler received a Scholarly Studies grant for research on Chang Dai-chien, the 20th-century Chinese artist to be featured in an exhibition at the Sackler in FY 1992.

Restricted Funds - These funds are contributions in the form of grants and gifts from individuals, foundations, organizations, or corporations for specific purposes.

The major portion of the nonappropriated Trust funds for the Freer comes from the Charles Lang Freer bequest, which restricts their use. The funds help finance the Freer's professional curatorial and administrative staff, acquisitions for the collection and library, the maintenance of the Freer's courtyard, the operation of the Freer museum shop, the co-publication of the scholarly journal Ars Orientalis, an annual lecture series, the occasional publication of scholarly research, and other special projects. Funds from the Harold Stern Memorial Endowment support scholarly research in the field of Japanese art. Funds from the Forbes Endowment support research in conservation.

ARCHIVES OF AMERICAN ART

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	16	1,062	-	98	-	52	12	1,023	-	-
FY 1990 -Estimate	23	1,126	-	98	-	-	12	1,758	-	-
-Base	23	1,149								
FY 1991 Estimate	23	1,172	-	98	-	-	12	1,707	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	23	0	23
11 Personnel Compensation.....	722	19	741
12 Personnel Benefits.....	121	4	125
21 Travel.....	22	0	22
22 Transportation of Things.....	10	0	10
23 Rent, Communications & Utilities.....	25	0	25
24 Printing & Reproduction.....	29	0	29
25 Other Services.....	120	0	120
26 Supplies & Materials.....	24	0	24
31 Equipment.....	76	0	76
Total	1,149	23	1,172

Analysis of Increase

Necessary Pay.....	23
Program Funds.....	0

ABSTRACT - The Archives of American Art (AAA), a national research bureau with regional centers in New York, Boston, Detroit, San Francisco, and Los Angeles, is the Nation's largest repository of archival source materials relating to the history of the visual arts in the United States. It holds more than nine million documents, 400,000 photographs, 75,000 works of art on paper, and approximately 3,000 tape-recorded oral and video interviews. The Smithsonian Institution houses original materials in Washington, D.C., with microfilm copies of many available in regional centers and through interlibrary loan across the country. Besides its primary mission

of providing research materials for academic scholars, students, curators, collectors, and others studying the history of art, the Archives actively collects and preserves original source materials pertinent to such study. It also sponsors symposia, lectures, and other public programs to encourage research; conducts active membership and education programs; and publishes a quarterly journal.

The Institution requires \$23,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - Founded in 1954 as a private institution in Detroit, the Archives of American Art became a bureau of the Smithsonian Institution in 1970. The Archives promotes the study of American art and cultural history by assembling and preserving an ever-expanding collection of letters, diaries, sketchbooks, business records, photographs, drawings, prints, and oral history and video interviews. In making these primary historical records available to researchers and the public, the Archives advances the scholarly study and interpretation of the arts in America.

Research - In FY 1989, some 3,700 faculty members, graduate students, museum curators, Smithsonian Fellows, and free-lance writers used the Archives collections for research, often for extended periods. Eight hundred other scholars across the country borrowed 2,400 rolls of microfilmed collections through interlibrary loans. Staff members presented the results of their own research in several books, articles, and formal papers. Acknowledgments and citations to the Archives and its holdings appeared in more than 200 books, exhibition catalogues, articles, and dissertations published or completed during the year.

Collections Development - Most of the collections acquired by the Archives in 1989 cover the early to mid-20th century. Helen Torr and Arthur Dove's diaries and other papers trace the activities of Mr. Dove, who is one of the best-known early American modernist painters, and an important group of Andrew Dasburg's correspondence includes letters from Louise Bryant, Mabel Dodge, Marsden Hartley, D. H. Lawrence, John Marin, and Georgia O'Keeffe. The Archives supplemented its extensive documentation of the 1913 Armory Show when it borrowed the financial records of the event from the Hirshhorn Museum and Sculpture Garden. The treasurer of the artists' society that organized the 1913 exhibition, Elmer MacRae, compiled the original reports, and the Archives will retain microfilm copies of these valuable records.

The Depression and immediate postwar period comprise two major fields of Archives strength. Several new acquisitions have enhanced scholarship in these areas. These acquisitions include: Stuart Davis's material on the Artists' Union magazine Art Front; additions to the already voluminous papers of Marcel Breuer and Joseph Cornell; and Charles Pollock's correspondence, which includes several letters from and many references to his more famous brother Jackson. The records of Christopher Willmarth and an installment of the records of Dimitri Hadzi augment the Archives' materials on contemporary American sculpture.

Papers of artists in other media include those of the photographer Nickolas Muray and the potter Maija Grotell. The Norlyst Gallery files, the extensive records of the prominent art historian and museum director John I. H. Baur, and the papers of the folk art collector Herbert Hemphill cover more art world activities.

The Archives' oral history program, always a fruitful activity, produced taped interviews with artists from an older generation such as Milton Resnick and Herman Cherry and with younger artists such as Lois Dodd, Otto Piene, and Joel Shapiro. An

independent scholar, Ruth Bowman, donated a substantial collection of interviews which she conducted in the 1960s. These interviews recorded the observations of a wide range of notable artists, collectors, and museum directors, including the then-Secretary of the Smithsonian Institution, S. Dillon Ripley.

Exhibitions - A small but effective exhibition space in the new Archives' quarters in New York opened at the beginning of FY 1989, with Archives documents commemorating the 75th anniversary of the 1913 Armory Show. The second exhibition at the New York Regional Center showed a selection of new acquisitions including letters, photographs, sketches, cartoons, and printed items from various Archives' collections. As has long been the practice, the Archives also lent documentary material to museum art exhibitions throughout the country, including exhibitions at the Corcoran Gallery, the Art Institute of Chicago, the Pennsylvania Academy of the Fine Arts, the Graduate Theological Union in Berkeley, California, and the Danforth Museum in Framingham, Massachusetts. The American Art/Portrait Gallery Library opened its cases to a display of drawings, sketchbooks, and correspondence from the Oscar Bluemner papers.

Public Education - The quarterly Archives of American Art Journal is the chief means of disseminating information on the Archives' collections. The journal regularly publishes significant documents and oral history interviews, articles, reviews by art historians who use the Archives, and regional office reports on recent acquisitions. In FY 1989, the Smithsonian Institution Press published Reliable Sources, an illustrated book of artists' letters, sketches, and photographs drawn from the Archives' collections. Other works prepared by the staff and published during the year are a guide to Archives of American Art sources on African-American artists, a biographical dictionary of 20th-century Michigan artists, and a monograph on the African-American sculptor James W. Washington, Jr. The Archives' Washington office continued its monthly series of informal seminars on current research projects in art history and American studies.

Conservation and Care of Collections - The Philadelphia-based Conservation Center of Art and Historic Artifacts undertakes the conservation of fragile and deteriorating items for the Archives. Individual pieces treated for preservation in FY 1989 included 19th-century drawings, a lithograph, a volume of sketches by various artists, six photographs, three numbers of Alfred Stieglitz's scarce publication Camera Work, and 28 letters. The Archives' three-year campaign to transfer its card catalogue and other finding aids to a Smithsonian-wide computerized data base made substantial progress in FY 1989 with the entry of detailed descriptive information on nearly one-third of the 5,000 separate record groups.

With funding provided in FY 1989, the Archives hired an archives specialist to organize and manage its registrarial and cataloguing functions. The specialist will provide increased control of the collections, maintain acceptable standards for recording movement and use of the collections, and manage the necessary record keeping. The specialist will also be responsible for developing and maintaining the Archives' automated system to provide control over movement of all collections. This responsibility includes formulating policies and procedures necessary to implement this integrated system and training staff members in the use of the system. When the system is fully operational, Archives' managers will have an accurate and complete picture of the current status of all of the Archives' collections. By fulfilling the registrarial functions, the specialist will enable the Archives to respond more effectively and quickly to research needs and to assure that control of collections meets professional and Institution standards.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Provided through annual allotments, these funds defray costs associated with special events, supplement travel expenses incurred by the Archives' Board of Trustees, and provide partial support for general operating costs.

Restricted Funds - Fund-raising activities, gifts, foundation and corporation grants, the Board of Trustees, and a membership program generate funds for the Archives. A substantial portion of this income supports the Archives' general operating expenses, its oral history program, and its publications program.

Foundation and corporate grants provide the principal source of support for special projects. The Pew Charitable Trusts funded the Archives' Philadelphia Documentation Project for the final two years. Major grants from the J. Paul Getty Trust and the Andrew W. Mellon Foundation underwrite the costs of the Archives' retrospective cataloguing and automation project, and the Ahmanson and Times Mirror Foundations contribute to the support of the Southern California Research Center. The Henry Luce Foundation, Inc., provided funding for a three-year national collecting effort enabling the Archives to do further collecting work throughout the South, to begin an Asian-American documentation project on the West Coast, and to begin publication of guides to art-related sources for study in Philadelphia and Chicago. Funds from the Brown Foundation, Inc., have made possible the processing of the Walter Pach papers along with a fall 1989 exhibition in New York of selected documents and publication of a guide to the collection. Brown Foundation funds also underwrite the costs of general operations, as does income from the Wellin-Taubman Reserve Fund established in 1986 by the Archives' Board of Trustees.

COOPER-HEWITT MUSEUM

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	28	1,288	18	871	7	1,573	1	1,017	-	9
FY 1990 -Estimate	32	1,462	18	933	7	1,095	1	934	-	-
-Base	32	1,488								
FY 1991 Estimate	32	1,514	18	940	7	1,116	1	252	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	32	0	32
11 Personnel Compensation.....	956	23	979
12 Personnel Benefits.....	112	3	115
21 Travel.....	4	0	4
23 Rent, Communications & Utilities.....	17	0	17
25 Other Services.....	297	0	297
26 Supplies & Materials.....	72	0	72
31 Equipment.....	30	0	30
Total	1,488	26	1,514

Analysis of Increase

Necessary Pay.....	26
Program Funds.....	0

ABSTRACT - The Cooper-Hewitt Museum, the National Museum of Design, located in New York City, explores both the processes and the products of design. It examines the influence objects have on daily life--how they shape and are shaped by culture. The design concerns of the Museum are virtually unlimited, encompassing fields as various as urban planning, architecture, industrial design, landscape design, interior design, textiles, fashion, theater arts, advertising, graphic arts, and crafts. The National Museum of Design seeks to encourage "good design" as well as to foster an improved understanding of the design process, to raise the level of discussion in related fields, and to improve the dialogue between audience and designer. It pursues this goal through diverse programs, which include provisions for making the

collections available for study, research, and display; educational programs for professionals, graduate students, and the general public; general exhibitions; publications; and conferences keyed to significant design issues.

The Institution requires \$26,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The Cooper-Hewitt was originally established as the Museum of the Arts of Decoration of the Cooper Union in 1897 by the Hewitt sisters, granddaughters of Peter Cooper, founder of the Cooper Union for the Advancement of Science and Art. They saw it as a working laboratory--freely available to as broad a public as possible. The collections were acquired by the Smithsonian in their entirety in 1968. In 1972, the Carnegie Corporation donated the historic 1902 mansion, built as the private residence of Andrew Carnegie, and the McAlpin-Miller House, a small neighboring townhouse, to the Smithsonian as the permanent home for the Museum and its collections. The Museum reopened to the public as the Cooper-Hewitt National Museum of Design in October 1976. Today, students, professionals, and the general public use the Museum's collections as guides, inspirations, and references for their own creativity.

During FY 1989 the Institution acquired the Fox House, at 11 East 90th Street, with Smithsonian trust funds. The acquisition of Fox House represents an opportunity for the contiguous expansion of the Cooper-Hewitt facility. It will eventually provide physical space for museum activities and offices and it will house the Master's Degree program. The Museum plans to renovate and expand the adjacent Miller House (9 East 90th Street), which it has owned for a number of years, and these plans will be modified to include Fox House.

Collections - The Museum cares for approximately 170,000 permanent collection items including drawings, prints, wallcoverings, textiles, ceramics, glass, metalwork, jewelry, and related decorative arts from Europe, America, and Asia, spanning 3,000 years. The Museum's specialized library of 50,000 volumes includes more than 5,000 rare books, 3,000 trade catalogues, and subscriptions to 300 periodicals. In FY 1989, the Museum's library served more than 800 outside users, and circulated nearly 3,000 volumes. Cooper-Hewitt also has important industrial design archives, including materials from Henry Dreyfuss, Donald Deskey, Ladislav Sutnar, George Kubler, Therese Bonney, and Gilbert Rohde. Many consider the Museum's holdings among the finest of their kind in the world.

Exhibitions - The Museum presents 10-12 new exhibitions annually, many of which are originated by Cooper-Hewitt staff and consulting curators. These events draw many visitors to the Museum. In FY 1989, attendance totaled 136,424.

In October 1988, the Museum presented two international exhibitions: "The Modern Dutch Poster: The First 50 Years, 1890-1940," organized by Krannert Art Museum, University of Illinois at Urbana-Champaign, and "Erich Mendelsohn: Architectural Drawings," organized and drawn from the collections of the Kunstbibliothek SMPK in Berlin. Opening in November 1988, in celebration of the 300th anniversary of the accession of William and Mary to the throne of England, was "Courts and Colonies: The William and Mary Style in Holland, England, and America," which included more than 250 works of art, architectural prints, drawings, furniture, ceramics, and silver from the late 17th and early 18th centuries. Under the gracious patronage of Her Royal Highness Princess Margriet of the Netherlands, the exhibition was co-organized by Cooper-Hewitt and the Carnegie Museum of Art in Pittsburgh. The international

curatorial team consisted of colleagues from the Rijks museum in Amsterdam, the Victoria and Albert Museum in London, and staff from Cooper-Hewitt.

Many exhibitions are drawn from the Cooper-Hewitt's permanent collections. In December 1988, the Textile Department organized "Purses, Pockets, Pouches," a survey of textile techniques and materials involved in making purses, pockets, pouches, and portfolios, which included examples of small bags dating from the 17th to the 20th centuries. In January 1989, the Drawings and Prints Department, from its holdings of more than 7,000 American drawings, exhibited 75 drawings, watercolors, and oil sketches spanning the period from the 1830s to the 1930s and including works by such artists as Winslow Homer, Frederic Edwin Church, Thomas Hart Benton, Elihu Vedder, Thomas Moran, William Trost Richards, and William Merritt Chase. "American Drawings: Training the Hand and Eye" is currently traveling under the auspices of the Smithsonian Institution Traveling Exhibition Service (SITES) through October 1990.

The Museum also played a particularly significant and highly visible role in the international celebrations of the Bicentennial of the French Revolution with its presentation of another landmark exhibition, "L'Art de Vivre: Decorative Arts and Design in France, 1789-1989," which opened March 30, 1989. This exhibition filled the entire Museum and brought together more than 600 works from public, private, and corporate collections in France and the United States and attracted approximately 70,000 visitors. Some of the most notable visitors to the show included Mme. Mitterrand and Mayor Jacques Chirac of Paris.

"Polished Perfection: The Art of Turned-Wood Bowls," organized by SITES, opened on July 25, 1989. It included 84 works by 21 North American master turners and four early American settlers, originating from the private collection of Edward Jacobson. "Views of Rome: Drawings and Watercolors from the Vatican Library," also organized by SITES, opened at the Museum on August 8, 1989. With 81 drawings ranging from the 16th-19th centuries, it focused on the physical changes of the ancient monuments of Rome and the Campagna over the years, as well as changing artistic viewpoints. Also in August, the Decorative Arts Department presented an exhibition of 19th-century jewelry from the Museum's permanent collection which includes Renaissance Revival designs from Giuliano Castellani.

"The Intimate World of Alexander Calder," opened on October 17, 1989. The exhibition is comprised of personal works by the sculptor for family and friends, such as miniature mobiles and stables, household utensils, toys, jewelry, wire sculpture, drawings, and countless other items. Organized by the Musee des Arts Decoratifs in Paris, the exhibition is accompanied by a 400 page book of the same title. In November 1989, the Museum presented an exhibition developed from the Drawings and Prints Department holdings of the work of E. McKnight Kauffer, the 20th-century graphic designer-illustrator particularly noted for his posters featuring British Rail and American Airlines and for his costume and stage designs. In the spring of 1990, the Cooper-Hewitt will present another project involving the collection. "Color, Light, Surface" will focus on textiles of the last decade, particularly innovative works involving surface effects and color, new fibers, dye techniques, and the effects of light on textile surfaces. For presentation in the Museum's garden in the summer of 1990, the Museum plans a "hands-on" exhibition of architect-designed doghouses that addresses design issues for the blind. The project is organized in cooperation with Guiding Eyes for the Blind, Inc. In September 1990, the Museum will present "Drawings by Francesco and Giovanni Carlo Bibiena," an exhibition of work by the renowned 18th-century stage and theater designers, which is organized by the Museo Nacional de Arte Antigua in Lisbon and circulated by Art Services International. Future exhibition

plans include the continuing development of an exhibition and publication on "Czech Architecture and Design, 1900-1950," scheduled for 1992. The project is a joint undertaking with the National Museum of Technology in Prague, the National Museum of Decorative Arts, Prague, the Canadian Centre for Architecture, Montreal, and, possibly, a second American venue. Also in 1992, as its contribution to the Columbus Quincentenary celebrations, Cooper-Hewitt will present an exhibition on maps and the age of exploration.

Publications - Cooper-Hewitt publishes exclusively with private funds. In November 1988, the Museum produced Courts and Colonies: The William and Mary Style in Holland, England, and America, a 252-page catalogue that has received critical acclaim. A thematic publication containing nine essays, L'Art de Vivre: Decorative Arts and Design in France, 1789-1989, accompanied the exhibition of the same name. The Museum is in the process of editing both Housing: Symbol, Sites, Structure, a project of the director emeritus which will appear in conjunction with the "Home" project, and The Catalan Spirit: Gaudi and His Contemporaries, inspired by the Museum's FY 1987 exhibition. Also, Cooper-Hewitt received a Federal Design Achievement Award for its 1985 publication Wine: Celebration and Ceremony.

Education - In addition to those visitors who enjoy Cooper-Hewitt exhibitions and publications, the Museum serves a large and diverse group who enroll for lectures, courses, symposia, workshops, and tours organized throughout the year by the Programs Department. These audiences, some of whom receive undergraduate college credit from Parsons/New School for course work completed at the Museum, annually average 5,000-6,000. During FY 1989, programs included:

- Enid and Lester Morse Lecture Series: "The Palatial Setting: The Architectural Legacy of the Reign of William and Mary" and a major symposium on decorative arts of the period, entitled "The Glorious Revolution in the Decorative Arts during the Reign of William and Mary," which was made possible through the generous support of Mr. and Mrs. Lester Morse;
- Lillian Brizel Sapirstein Lecture: "19th-Century French Jewelry: Empire to Art Nouveau" and a seminar, sponsored by the Comite Colbert and HQ, entitled "A Taste for History: Fashion and Furnishings in 19th-Century France," both offered in conjunction with "L'Art de Vivre";
- "1939 World's Fair Programs: The Larry Zim Memorial Lecture on the 50th Anniversary of the 1939 World's Fair," held in commemoration of the Larry Zim bequest of 1939 World's Fair materials to the Smithsonian Institution and the Cooper-Hewitt Museum, and a special showing of vintage film footage on the Fair compiled from historic documentary films and rare home movies;
- programs related to themes in the Museum's collections, including a symposium on magazine design, a colloquium on American ceramics, a lecture on the architecture of Erich Mendelsohn, and a series on French and Italian garden history; and
- a lecture series on African textiles in celebration of Black History Month.

The Programs Department also organized an architectural study tour to Central Europe and is planning a similarly focused tour of the Soviet Union in 1990.

The Cooper-Hewitt/Parsons School of Design Graduate Studies Program in the History of European Decorative Arts has graduated six classes since its inception in 1982. The Graduate Program is the first academic degree-granting program ever offered by the Smithsonian Institution. Each year, 15-20 students enroll for a two-year period of classwork, field trips, and independent study in various areas of the history of design and decorative arts. Accredited by the New York State Board of Regents, the Program awards a master of arts degree upon completion of course work and research requirements. Graduates have assumed a wide range of professional, curatorial, and educational positions.

Special Events - Much of the Cooper-Hewitt's year-round activity depends substantially upon the support received from approximately 5,500 members, individual or foundation benefactors, and corporate sponsors and patrons. The Museum hosted several special events during FY 1989 at which major corporate patrons celebrated the Cooper-Hewitt's work and their own interest in the design arts. Firms include Air France, Henri Bendel, the Hearst Corporation, AMEV Holdings, Krug, Christofle, and the hotel members of the Comite Colbert. Hermes held a special benefit reception for the Museum's Junior Committee. At the opening reception and ceremonies for "Courts and Colonies," one of the largest events of FY 1989, the Museum was honored by the presence of Her Royal Highness Princess Margriet of the Netherlands, her husband Mr. Pieter Van Vollenhoven, and their son Prince Bernard, as well as the Netherlands Ambassador to the United States, Richard Fein and Mrs. Fein; the Netherlands Ambassador to the United Nations, Adriaan Jacobovits de Szege and Mrs. Jacobovits de Szege, Consul General Adrien F. Tieleman and Mrs. Tieleman, and British Consul General Sir James and Mrs. Mellon. Nearly 2,000 guests attended the gala opening of "L'Art de Vivre," including Mayor Edward I. Koch of New York City; the Ambassador of France, Emmanuel de Margerie and Mrs. de Margerie; Consul General Benoit D'Aboville; designer Philippe Starck, and actress Catherine Deneuve. Of special note was the Garde Republicane, sent to New York by President Francois Mitterrand in celebration of the opening of the American festivities for the Bicentennial of the French Revolution.

Nearly 2,000 members enjoyed the Museum's annual June Garden Party. In a separate event, Mayor Koch delivered the opening remarks for the Museum's single-evening celebration of New York City's 11th annual Museum Mile Festival, at which more than 5,000 New Yorkers toured the Museum. A series of six free musical concerts sustained the festive mood throughout the summer season.

Collections Management - Among the Smithsonian's art museums, Cooper-Hewitt has a tradition of being one of the most active collectors, borrowers, and lenders. In FY 1989, the Museum acquired more than 2,324 items (385 by purchase, 1,937 by gift, and 2 bequests), lent 387 to 42 other museums, and borrowed 1,471 from 177 lenders. The Museum's two conservators treated 380 objects in the same period.

Efforts to refine the collection remain an important part of modern collections management activity at Cooper-Hewitt. During FY 1989, the Museum continued deaccessioning substantial groups of textiles, old master prints donated expressly for eventual sale, and paintings inappropriate to the scope of the collection.

Acquisitions - The most significant purchase of FY 1989 was the Henry and Ludmilla Shapiro Collection of Soviet porcelains. This collection, unique in the United States, comprises more than 250 examples of tablewares and figural porcelains made from the time of the Russian Revolution to the present day. The porcelains are an exceptionally complete survey of propagandistic ceramics made and promoted in the Soviet Union. The Museum acquired this collection with assistance from the

Collections Acquisition Program matched by funds raised by the Decorative Arts Association of the Cooper-Hewitt and a special donation, in the form of a generous discount from the collection's appraised value, from the Shapiros. The Museum also received a gift of the remaining materials in the Donald Deskey Archive, from the designer. The Museum received a portion of the materials as a donation in 1975 while the rest were in the Museum's care on loan. The entire Archive contains nearly 2,400 drawings and blueprints and more than 25 linear feet of documentary artifacts from every aspect of Deskey's career. An exhibition surveying his career, built around materials in the Archive, is in the planning stage.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - The Museum obtains these funds from a variety of sources, including museum shop sales, product development, individual and corporate memberships, admission fees, donations, fund-raising events, and allotments. The allotments support salaries of the director, administrative officer, three curators, registrar, and various staff members and help defray expenses associated with special events such as exhibition openings. Special purpose funds support the Museum's programs, exhibitions, and publications.

Restricted Funds - Designated for specific purposes, these funds derive from grants, bequests, and other donations from individuals, organizations, and corporations. In FY 1989, these funds supported exhibitions such as "Courts and Colonies: The William and Mary Style in Holland, England, and America," "L'Art de Vivre: Decorative Arts and Design in France, 1789-1989," and smaller projects. In FY 1990, funds raised will support the exhibition, "The Intimate World of Alexander Calder" and a future exhibition "Cooper Union Legacy" (working title).

In FY 1988, the Museum received a challenge grant from the Andrew W. Mellon Foundation for a permanent research endowment. The Museum made important progress in FY 1989 in the drive to raise the \$400,000 matching funds. Other significant fund-raising accomplishments culminating in FY 1989 included grants from the Shell Oil Company and the Dutch American West-India Foundation for "Courts and Colonies"; the Andy Warhol Foundation for the Visual Arts for "The Intimate World of Alexander Calder"; the Peter Krueger-Christie's Foundation, Inc. for an annual fellowship to a promising scholar; the James Smithson Society for the publication of a new Cooper-Hewitt visitor's brochure; Banco di Santo Spirito, and the American Friends of the Vatican Library for "Views of Rome"; Van Munching and Co. for "The Modern Dutch Poster"; the Helena Rubinstein Foundation for scholarships in the Graduate Program; and numerous other grants and in-kind gifts or donated services.

Government Grants and Contracts - Various government agencies and departments provide these funds for specific program support. The Museum annually seeks funding in varying amounts from the New York State Council on the Arts for exhibition support and other programs.

NATIONAL MUSEUM OF AFRICAN ART

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	49	3,503	1	76	-	278	-	69	-	-
FY 1990 -Estimate	58	3,610	1	51	-	60	-	48	-	-
-Base	58	3,662								
FY 1991 Estimate	58	3,713	1	61	-	50	-	25	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	58	0	58
11 Personnel Compensation.....	1,706	41	1,747
12 Personnel Benefits.....	339	10	349
21 Travel.....	45	0	45
22 Transportation of Things.....	86	0	86
23 Rent, Communications & Utilities.....	4	0	4
24 Printing & Reproduction.....	128	0	128
25 Other Services.....	763	0	763
26 Supplies & Materials.....	411	0	411
31 Equipment.....	50	0	50
Collections Acquisition.....	130	0	130
Total	3,662	51	3,713

Analysis of Increase

Necessary Pay.....	51
Program Funds.....	0

ABSTRACT - The National Museum of African Art (NMAfA) is the only museum in the United States devoted to the collection, preservation, research, exhibition, and interpretation of the visual arts of sub-Saharan Africa. Founded in 1964 as a private nonprofit institution, the Museum became a bureau of the Smithsonian Institution in August 1979 following the enactment of Public Law 95-414. In December 1986, the Museum moved from its original Capitol Hill location to its new facilities on the Mall as a part of the Quadrangle Complex, which opened to the public in September 1987.

The Institution requires \$51,000 for necessary pay for existing staff funded in this line-item.

PROGRAM - NMAFA endeavors to instill an appreciation and understanding of the diverse cultures in Africa south of the Sahara. Although the Museum's primary emphasis is on the traditional cultures of the sub-Saharan region, it also studies and exhibits the ancient and contemporary arts of the entire continent. The Museum develops and presents a variety of interpretive programs including exhibitions, lectures, gallery tours, classes, workshops, audio-visual presentations, and publications. The aesthetics of traditional African art are part of every program, and the Museum actively cooperates and coordinates its activities with those organizations and institutions whose purposes are complementary.

Research - The Museum's program of scholarly publications complements its intensive program of exhibitions. In FY 1989, the Museum published the catalogue Foreheads of the Dead: An Anthropological View of Kalabari Ancestral Screens by Dr. Nigel Barley, curator at the British Museum, to accompany the exhibition "Kalabari Ancestral Screens: Levels of Meaning." The Museum's curators authored a 20-page color brochure, which was available in the exhibition gallery. During the same year, Dr. Herbert Cole, recent Rockefeller Fellow in residence at the Museum, completed Icons: Ideals and Power in the Art of Africa, a book that accompanies the exhibition of the same name, which opened in October 1989. The book, which includes photographs of all the exhibited works as well as field photography of art in Africa, examines five persistent iconographical themes in the history of African art.

Several important collection-related research projects currently in progress will result in publications and exhibitions. For example, archival and oral history research on the life and works of the Yoruba master carver Olowe of Ise. This research, to be published in the first monograph ever devoted to a traditional African artist, has as its basis a major Olowe sculpture donated to the permanent collection. In addition, the first major publication devoted to the Museum's permanent sculpture collection is now in the research stage. Members of the research staff will study, identify, and place on exhibition an extraordinary collection of 85 ceramic vessels from Central Africa. They will also determine the origins and uses of a group of utilitarian objects, including containers, stools, headrests, and pipes primarily from East and Southern Africa, and will place them on exhibition.

In June 1989, the Museum hosted the Arts Council of the African Studies Association's Eighth Triennial Symposium on African Art, the most important regular meeting of African art studies specialists worldwide. More than 250 national and international scholars and specialists took part in more than 100 scholarly presentations. The Museum made abstracts of selected papers available to the participants. A program of films on African art accompanied the symposium. Funding from the Arts Council of the African Studies Association and the National Museum of Natural History augmented NMAFA staff support and a special grant to the National Museum of African Art from the Shell Companies Foundation in support of this endeavor.

The Eliot Elisofon Archives, a major research component of the National Museum of African Art, is one of the world's largest photographic archives on African art, cultural history, and environment. Its holdings have grown to more than 140 collections consisting of approximately 200,000 color slides, 78,000 black-and-white photographs, and more than 140,000 feet of motion picture film and video tape.

Among the Archives' most important acquisitions during FY 1989 were 40 cartes de visites and 33 cabinet cards of Senegalese peoples, published by Bonnevide, ca. 1880; an album of 52 postcards of Sierra Leone, ca. 1900-1920; 143 color slides of Ethiopian art and archeological sites, 13th-18th centuries; 326 color slides of art and field images from Ethiopia, the Sudan, and the Niger River; 56 black-and-white prints of the William Brill African Art Collection; and 112 black-and-white copy prints of African art from private collections transferred from the National Gallery of Art to the study file of the Archives.

International scholars and museum staff continue to make extensive use of the Museum's archival holdings. In FY 1989, for example, Archives staff processed 4,538 images in response to requests for slides and prints and also provided research and reference service for exhibitions and publications.

Library - The National Museum of African Art Branch of the Smithsonian Institution Libraries (SIL) system, one of the major African art library collections in the world, provides reference and research support not only for museum staff but for national and international scholars, including those from Africa. As a result of a major acquisitions program from 1985 to 1988, the collection now exceeds 20,000 volumes. The Library continues to develop its collection to serve the expanding research needs of the Museum and the growing number of external scholars and students who make frequent and extended use of library materials through on-site visits and interlibrary loan. The Library is a major contributor in the field of African art bibliography through its new biennial publication, The Arts of Africa: An Annotated Bibliography (Crossroads Press), the first volume of which will appear in 1990. The Library also continues an active outreach program through the publication and distribution of the monthly Library Acquisition List to about 700 individuals and institutions worldwide.

Conservation - In the area of ethnographic conservation, the National Museum of African Art has a research facility that allows conservators and resident conservation interns and fellows to contribute to both fundamental and applied research on the materials of ethnographic objects. Staff conservators not only treat objects in the permanent collection but also examine and conserve objects on loan to the Museum. In addition to the 90 objects examined during FY 1989, conservation staff also developed prototype packing techniques for a unique and extremely fragile group of Kalabari (Nigeria) ancestral screens on loan from the British Museum.

Current and future research projects include:

- identification of corrosion processes on West African ironwork to determine appropriate conservation treatment;
- technical analysis of the Museum's collection of Benin (Nigeria) copper alloy objects in cooperation with the Smithsonian Conservation Analytical Laboratory;
- research on a self-contained dehumidification system to permanently reduce the relative humidity in metals storage areas and so arrest electrolyte corrosion;
- examination and radiography of an outstanding Sapi-Portuguese ivory saltcellar, on loan to the Museum, to determine if there has been restoration.

Exhibitions - In the spring of 1989, the Museum opened three exhibitions: "Gold of Africa: Jewelry and Ornaments from Ghana, Cote d'Ivoire, Mali, and Senegal," an important collection of West African gold objects from the Barbier Mueller Museum, Geneva, Switzerland; "Sounding Forms: African Musical Instruments," a major international loan exhibition organized and circulated by the American Federation of Arts; and "The Essential Gourd," an exhibition organized by the UCLA Museum of Cultural History. The Pepsi-Cola Company provided generous support for an extensive public relations campaign and the opening reception for both "Gold of Africa" and "Sounding Forms."

The Museum's FY 1990 exhibition schedule opened in late October 1989 with a major loan exhibition, "Icons: Ideals and Power in the Art of Africa." The exhibition is guest curated by Dr. Herbert Cole, professor of art history at the University of California at Santa Barbara and 1988 Rockefeller Fellow in Residence at the Museum. An exhibition of photographs by Bernard Plossu, "The African Desert," opened in November 1989. "Yoruba: Nine Hundred Years of African Art and Thought," organized by the Center for African Art will follow.

Future exhibitions will include the installation of an extraordinary collection of 85 ceramic vessels from Central Africa and a group of utilitarian objects including containers, stools, headrests, and pipes primarily from East and Southern Africa. Both collections are important recent additions to the Museum's permanent collection. Also for FY 1991, the Museum is planning "African Reflections: Art from Northeastern Zaire," organized by the American Museum of Natural History, New York and "Portraiture: Sierra Leone Paramount Chiefs," photographs by Vera Viditz Ward, originated by the Museum.

Development of Collections - The Museum continues to develop its collections by acquiring works of art of outstanding aesthetic quality. An active and continuing acquisitions program, through purchase and gift, remains one of the Museum's highest priorities. The collection is the basis for exhibitions, public programs, and research.

In FY 1989, noteworthy gifts included a rare Yoruba palace door carved by Olowe of Ise (Nigeria), a Tiv chair, a Bassa mask (Liberia), a rare Kongo cast copper bracelet (Zaire), and an East African gourd with a figurative stopper. Through purchase, the Museum acquired a Chamba standing male figure (Nigeria), a Kwere gourd with a seated female figure (Zambia), and 15 utilitarian objects primarily from East and Southern Africa. A grant from the James Smithson Society made possible the acquisition of a collection of 75 utilitarian objects primarily from East and Southern Africa. With funds provided by the Collections Acquisition Program of the Board of Regents, the Museum acquired a major collection of 85 ceramic vessels from Central Africa. These important works are a major addition to the national collection of African art that the Museum is selectively building.

Education - The National Museum of African Art develops and presents a variety of programs to increase public awareness and understanding of African art. Interpretive programs such as lectures, films, gallery talks, and workshops supplement an active exhibition schedule. These programs offer a range of opportunities and incentives for learning about Africa and its artistic heritage. During FY 1989, the Museum offered more than 1,200 public programs, serving more than 40,000 visitors. An additional 3,000 individuals in senior care centers and hospitals participated in the Museum's

various outreach programs. Through the Museum's film lending program, videotapes on African art reached an estimated audience of more than 6,000 individuals.

In FY 1989, the Museum hosted a reception for the National Art Educator's Conference and gave teacher workshops to more than 300 local educators. The Museum's education staff participated in the D.C. Public Schools Chapter 1 Museum Project by offering a structured series of programs on African art and culture to elementary classes from McGogney Elementary School and Green Elementary School. In conjunction with the D.C. Chapter of the Links, the education staff developed a series of gallery discussions, workshops, films, and slide programs for female high school students. The Museum also continues to sponsor classes and lectures on African art each year in conjunction with other Smithsonian programs, universities, and outside organizations.

The Museum's docent training program ensures that knowledgeable volunteer guides are available to conduct tours and other educational programs. To serve the thousands of visitors who participate in docent-led gallery tours, the Museum recruited and trained 40 new docents in FY 1989. The active docent corps now numbers nearly 100.

In its continuing effort to assure that the Museum's education programs successfully reach the broadest possible audience, the Museum plans to evaluate program quality during FY 1990. Also in FY 1990, the Museum's pretour materials for teachers will include background on African geography, history, culture, and contemporary art in addition to information on specific art programs. These improvements come in response to requests from teachers, docents, and museum staff, who find that visiting students understand African art better if they have a basic knowledge of the continent and its people before they arrive at the Museum.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds come from the Museum's share of net proceeds from the museum shop, courses conducted in cooperation with Washington metropolitan area public education institutions, and allotments. NMAFa uses these funds to provide additional support for the Museum's education and collections acquisition programs, exhibition openings, publications, and travel costs associated with meetings of the Museum's commission. In FY 1990, an allotment will also support the salary costs of one employee. In FY 1989, a grant from the James Smithsonian Society made possible the acquisition of an important group of 75 utilitarian objects, including containers, stools, headrests, and pipes, primarily from East and Southern Africa. Funds from the Smithsonian's Collections Acquisition Program allowed the Museum to purchase 85 ceramic vessels from Central Africa.

Restricted Funds - Individuals, foundations, organizations, and corporations contribute these funds in the form of grants and gifts for specific purposes. Also, the Museum receives income from a collections acquisition endowment established in FY 1988. A generous pledge over a five-year period, begun in 1988, augments the Museum's federal publication funds. A grant from the Women's Committee of the Smithsonian National Associates Program enabled the Museum to acquire the videotape series, Things Fall Apart, based on a novel by the celebrated Nigerian author Chinua Achebe, for its public education program on the Igbo people of southeastern Nigeria. A contribution from a private donor provided direct support for special events associated with the "Gold of Africa" exhibition.

ANACOSTIA MUSEUM

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	14	905	1	29	-	24	-	-	-	-
FY 1990 -Estimate	20	1,002	1	47	-	-	-	-	-	-
-Base	20	1,038								
FY 1991 Estimate	20	1,073	1	57	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	<u>Base FY 1990</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1991</u>
FTE Allocation.....	20	0	20
11 Personnel Compensation.....	590	30	620
12 Personnel Benefits.....	91	5	96
21 Travel.....	5	0	5
22 Transportation of Things.....	4	0	4
23 Rent, Communications & Utilities.....	2	0	2
24 Printing & Reproduction.....	58	0	58
25 Other Services.....	226	0	226
26 Supplies & Materials.....	47	0	47
31 Equipment.....	15	0	15
Total	<u>1,038</u>	<u>35</u>	<u>1,073</u>

Analysis of Increase

Necessary Pay.....	35
Program Funds.....	0

ABSTRACT - Located at Fort Stanton Park in southeast Washington, D.C., approximately six miles from the Mall, the Anacostia Museum is a national resource on African-American history and culture in America. The Museum's exhibitions, scholarly and applied research, historical documentation, and interpretive and educational programs offer scholars and the public the opportunity to study the history and culture of black America from a unique, multi-ethnic perspective. The Smithsonian Institution does not seek any additional FY 1990 programmatic increases for the

Anacostia Museum. The Institution requires \$35,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The Anacostia Museum is a national prototype for scholarly and applied research, historical documentation, exhibitions, and educational programs that interpret for the public the experiences of African Americans and their contributions to science, history, and the arts. The Anacostia Museum collaborates with other Smithsonian museums and programs, when possible, to conduct research and develop exhibitions on subjects related to African-American history and culture.

Established in 1967 as a cultural resource for the people of Anacostia, the Museum has developed more broadly into a museum on African-American history and culture. Today it is a valuable source of materials on African-American history, working with other museums and research institutions, universities, and archives throughout the United States to enhance the awareness and appreciation of the historical and cultural contributions of African Americans to American society. The Museum has developed innovative ways for introducing nontraditional museum audiences to the worlds of science, history, and the arts. The Museum is an active member in several professional museum associations including the American Association of Museums and the African American Museums Association.

Research - Since its founding in 1967, the Anacostia Museum has documented the history and culture of African Americans and their significant contributions to the heritage of this nation. During the past few years, the Museum has strengthened its research capabilities and expanded its exhibition program.

A new registrar position will allow the Museum to strengthen the research department's curatorial functions. The registrar will coordinate loan requests, examine artifacts, and supervise the handling, mounting, and storage of artifacts. In addition, the registrar will catalogue the Museum's growing permanent collection and serve as liaison between research department historians and design and production department staff.

As a result of an agreement between the Museum and the Smithsonian Institution Libraries in May 1989, the responsibility for the administration of the Anacostia Museum's library collection has transferred to the Libraries. The incorporation of this collection, which consists of approximately 1,500 volumes including serial runs and sets of encyclopedias, into the SI Libraries' system, greatly enhances the Museum's research capabilities by giving it access to SIL's personnel recruitment, training, preservation and cataloging services. As part of this transfer of responsibility, the librarian position approved for Anacostia in the FY 1989 budget has been transferred to the Libraries.

During FY 1989, the Museum conducted research on two exhibitions scheduled for FY 1990 and FY 1992:

- "P. H. Polk: The Man and His Work," scheduled to open in late FY 1990, will feature Prentice H. Polk's photographic depiction of 20th-century southern folklife. It will include vintage and signed prints from the P. H. Polk estate, Tuskegee University archives, and private lenders and galleries. Born in 1898, Polk was a photographer whose documentation of southern folklife spanned more than half a century and gained national recognition during the last decade of his life. In addition to Polk's photographs, videotape excerpts of television interviews with Polk conducted by NBC, CBS,

and Metro Media News will allow visitors to learn more about the man himself as well as his work. Louise D. Hutchinson, former director of research at the Anacostia Museum, is the guest curator.

- "To Achieve These Rights: The African-American Struggle for Equal Rights in the District of Columbia, 1791-1991" (working title) is scheduled to open early in FY 1992. Commemorating the bicentennial of the District of Columbia, the exhibition will examine, from a legal history perspective, the struggle by African Americans to secure equal rights in the Nation's Capital. It will focus on how the laws of Congress and the District have affected African Americans and how African Americans have sought to change the laws.

Collections Management - During FY 1989, the Museum completed its collections management policy and sent it forward for the Institution's review. Institutional endorsement of this policy is an essential prerequisite for the establishment of a permanent Anacostia collection. Also in FY 1989, the Museum completed an inventory of its current collection of 5,000 valuable books, letters, photographs, and artworks.

Exhibitions at the Museum - The Anacostia Museum presented "Inspiration: 1961-1989," a retrospective showing of art created by 35 members of the District of Columbia Art Association (DCAA), from January to March 1989. It included such well-known and respected African-American artists as Richard Dempsey, Lois Mailou Jones, Alma Thomas, and James Wells. Representing a wide range of visual expression, the 62 works in the exhibition displayed media such as acrylic, oil, colored pencil, collage, watercolor, pen and ink, and mixed media on plywood and copper. A catalogue chronicling DCAA's history accompanied the exhibit.

"The Real McCoy: African-American Invention and Innovation, 1619-1930," which opened in the summer of 1989, has earned widespread media coverage and an enthusiastic reception from visitors. It examines the synthesis of African, native-American, and European technologies during the early colonial period. It also studies the impact of slavery on African-American invention and the achievements of 19th- and 20th-century African-American inventors. During three years of research, the exhibition's curator had located more than 150 artifacts in many states, including Alabama, California, Hawaii, Massachusetts, Michigan, and Ohio. Highlights of the exhibition include:

- archeological artifacts illustrating African technological traditions in 17th-century America;
- 18th-century woodworking tools by Cesar Chelors, the first identified African-American toolmaker;
- patent models submitted to the U.S. Patent Office by African-American inventors;
- manufactured goods by innovative African-American entrepreneurs;
- prototypes of the modern gas mask and traffic signal invented by Garrett Morgan.

A catalogue accompanies the exhibit. The Museum recently produced an interactive video on inventiveness and problem-solving geared toward young African-American visitors as a complement to the exhibit. Distribution of the video to schools,

community groups, and other institutions will expand the reach of the exhibit's experience.

Traveling Exhibitions - The Anacostia Museum has produced several traveling exhibitions related to the history, culture, and achievements of African-Americans. These include "Out of Africa"; "The Frederick Douglas Years"; "Black Women: Achievements Against the Odds"; and "Mary McLeod Bethune and Roosevelt's 'Black Cabinet'." These traveling exhibitions, circulated by the Museum and by the Smithsonian Institution Traveling Exhibition Service (SITES), allow the Museum to reach a diverse national audience. SITES' brochure, "Black History and Ethnic Studies Exhibitions from the Smithsonian Institution," highlights 16 SITES exhibitions currently available for travel, including "Black Women" and "Out of Africa," that are of particular interest to institutions looking for traveling exhibitions in these fields.

"Black Women: Achievements Against the Odds" profiles the lives, careers, and accomplishments of 200 African-American women. Among them are Madame C. J. Walker, America's first African-American millionaire; Edmonia Lewis, one of the first African-American female artists to gain international recognition; civil rights activist Rosa Parks; performer Bessie Smith; and former congresswoman Barbara Jordan.

"Out of Africa" documents the early chapters of African-American history. It addresses the trans-Atlantic slave trade, slave life in the American colonies, the abolition movement, and colonization efforts by free African-Americans in West Africa.

SITES has selected two additional Anacostia Museum exhibitions for its program: "The Real McCoy" and "Climbing Jacob's Ladder: The Rise of Black Churches in Eastern American Cities, 1740-1877." Several institutions and organizations, including the U.S. Patent and Trademark Office and the U.S. Patent Model Foundation, have already expressed interest in a traveling version of "The Real McCoy." "Climbing Jacob's Ladder" will go on tour as early as April 1990. The Museum is currently redesigning three SITES exhibitions--"Out of Africa," "The Frederick Douglass Years," and "Mary McLeod Bethune and Roosevelt's 'Black Cabinet'"--in lightweight formats that will be suitable for community centers, schools, and other nontraditional sites for Smithsonian exhibits.

Public Education and Orientation - During FY 1989, the Anacostia Museum presented a variety of public programs to complement "Inspiration: 1961-1989." Exhibiting artists participated in the show, helped to plan programs, served as panelists, conducted tours, and presented demonstrations that ranged from etching to portrait paintings.

FY 1989 public programs for "The Real McCoy" included sessions during which visitors and local inventors explored the process of inventing, patenting, and marketing. Visitors also learned more about historical inventors and innovators through films, videos, lectures, workshops, and seminars. Programs included:

- "So You Want to be an Inventor," a seminar for adults describing the patent process as well as the trials, tribulations, and pitfalls of being an inventor;
- "Inventors for a Day," a workshop led by the education department staff at which children, assisted by their parents, developed their own inventions and innovations;

- teacher workshops and seminars that suggested strategies for teaching about African-American inventors, creativity, and the patent process;
- films and videos on Dr. George Washington Carver, Madame C. J. Walker, and Benjamin Banneker.

Lunch Box Forums at the Museum included lectures by Frank O. Price, inventor of the game "Quarterback Draw Football," and Cortland O. Dugger, who developed barium magnesium aluminate, also known as Duggerite. Mr. Dugger explained his continuing work with electromagnetic conductors. The Museum also presented the forum, "A New View: Black Women as Artists."

The Friends for the Preservation of Afro-American Culture, organized by Anacostia's education program in 1988, draws participants from the Washington metropolitan area interested in preserving African-American culture. Guest speakers at the monthly sessions have included Karen Jefferson, curator of manuscripts at Howard University's Moorland-Spingarn Research Center; James Walker, associate director of the Sumner School Museum and Archives; and Louise D. Hutchinson, former director of the Museum's research department.

During the summer of 1989, one hundred children from throughout the Washington metropolitan area attended the popular Aerospace Workshop, sponsored jointly by the Museum and the National Air and Space Museum (NASM). Supported by a grant from the Smithsonian Educational Outreach Program, the workshop's unique curriculum taught children to build and fly kites and hot air balloons. They also learned about African-American contributions to aviation and space and visited NASM and the Goddard Space Flight Center.

On June 19, 1989, the Museum sponsored a Juneteenth celebration to commemorate the day Texas slaves received formal notification of their freedom--two and one-half years after the fact. Events included tours of "The Real McCoy" and demonstrations of quilting, doll making, cartooning, tie dyeing, and braiding. Visitors enjoyed entertainment ranging from Texas-style blues and jazz to gospel music, poetry, storytelling, and African drumming and dancing. The Fort Stanton Civic Association, officers from the D.C. Police Department's Seventh District, the D.C. Recreation Department, several Smithsonian offices, and a citizen advisory committee assisted the Museum in the celebration.

Future Development - The Smithsonian is committed to the continued existence and growth of Anacostia Museum, which is unique among all other museums in the Institutional complex for its close ties with the community it serves. In a report last year directed to the House Subcommittee on Appropriations, the Secretary states:

The Anacostia Museum has a distinctive history and purpose, and is not a facility that should be thought of as disappearing if and when a National Museum of African American History and Culture comes into existence in central Washington. ...it should be emphasized that it has played a strategic part in the founding of the African American museum movement. Moreover, the conception underlying it has always been that it would maintain strong ties to the Anacostia community. While it is not, and in that location cannot become, a substitute for a new national museum, its future also cannot be completely dependent on the latter.

Careful attention is being paid to the particular needs of the Museum, and no action on Anacostia is being delayed until larger issues involving a greater African American presence on the Mall can be resolved. The most pressing need is identifying new leadership for the Museum, which is essential for its future development. A search committee, that will consist of prominent individuals with knowledge of various African American communities as well as museum operations, is being assembled, and a date for its first meeting has been determined. To ensure overlap with larger issues, two members of the search committee--one on Anacostia's staff and the other from outside the Institution--will also serve on the working committee that is being established for the African American Presence on the Mall Project. Although the Institution is committed to their separateness, it is equally committed to forging bridges that will ensure effective communication between Anacostia and the Project as they both develop and evolve according to their own timetables and identities.

Since the death of John Kinard, the Museum has been undergoing a process of necessary stabilization and reassessment. Its internal organization is being studied by staff for more effective operating procedures, and its mission is being rethought and reaffirmed with discussions involving the Museum, its Board, and central Smithsonian administration. Last December the entire Museum staff discussed its mission and future with the Secretary. The Museum's Board has been meeting on a more frequent basis than it has in the past, is studying other Smithsonian boards, and is reconsidering its own definition and function within the Museum.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - An annual allotment supports the salary and benefit costs of an exhibit specialist. During FY 1989, the exhibit specialist completed new exhibit cases and other display materials for "The Real McCoy." In FY 1990, the exhibit specialist will build and finish all necessary exhibit components for the P. H. Polk exhibition. He also will construct special packing crates for traveling exhibitions.

Additional funds derived from donations and exhibition rentals purchase supplies and materials to support the Anacostia Museum's programs.

Restricted Funds - These are gifts that organizations and individuals have designated to support specific Anacostia Museum programs.

CONSERVATION ANALYTICAL LABORATORY

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	39	2,526	-	-	-	36	-	7	-	-
FY 1990 -Estimate	42	2,551	-	-	-	50	-	-	-	-
-Base	42	2,600								
FY 1991 Estimate	42	2,648	-	-	-	50	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	42	0	42
11 Personnel Compensation.....	1,599	39	1,638
12 Personnel Benefits.....	291	9	300
21 Travel.....	55	0	55
25 Other Services.....	400	0	400
26 Supplies & Materials.....	120	0	120
31 Equipment.....	135	0	135
Total	2,600	48	2,648

Analysis of Increase

Necessary Pay.....	48
Program Funds.....	0

ABSTRACT - The Conservation Analytical Laboratory (CAL) located at the Museum Support Center in Suitland, Maryland, is the Smithsonian's specialized research facility for the conservation and technical study of museum objects. CAL helps the Smithsonian and other museums in the study, preservation, and conservation of objects of artistic, scientific, cultural, and historical importance. CAL staff examines the conservation-related properties of these materials, extracts historical information from their technical record, and improves conservation treatment technology. Staff conservators apply the knowledge gained from scientific research directly to the actual treatment of objects. Experience with a wide range of materials and expertise in analytical and technological studies enables CAL to engage successfully in a

spectrum of interactive and collaborative research with anthropologists and art historians. The diversity and the wide variety in the state of preservation of objects in the National Collections provide the overview needed to define directions in conservation research. CAL also conducts a conservation training program that includes basic and advanced conservation training, supports and organizes workshops and seminars, and disseminates the latest knowledge in the field of conservation and cultural materials research to museums and research professionals throughout the United States and the world. The Institution is not seeking additional funds for FY 1991 programmatic increases for the Conservation Analytical Laboratory. The Institution requires \$48,000 for necessary pay for existing staff funded in this line-item.

PROGRAM - Archaeometry - CAL scientists develop or apply methods of chemical and physical analyses of museum objects and related materials and integrate the results of these analyses with archeological, anthropological, or art historical data on the objects and materials. These analyses provide data concerning materials, dates, provenances, attributions, and historical technologies that, in combination with contextual information and typological and stylistic analyses, help answer questions on the history of these objects and the cultures from which they derived.

During FY 1989, CAL scientists, in collaboration with scholars representing institutions from all over the world, engaged in several archeological projects involving both the Old and the New World. Using CAL's facilities for neutron activation analysis at the National Institute of Standards and Technology (NIST), scientists analyzed ceramic artifacts and clay sealings and tablets from the sites of Tell Leilan in Syria and Tepe Gawra, Nineveh, Arpachiyah, and Tell Brak in Northern Mesopotamia as part of a study of settlement trends and the emergence of social complexity. Using the same analytical technologies, scientists analyzed 16th-century Spanish majolica samples excavated by collaborating Spanish archaeologists at kiln sites in Seville. This work is part of a project that examines the supply of Spanish colonial sites in the New World. In collaboration with other United States universities and museums, CAL researchers expanded the analytical work on archeological native-American ceramic artifacts to evaluate historical, social, and economical relationships among various native-American groups.

The lead isotope spectrometry program focused on early Bronze Age tin sources in Anatolia. Analyzing samples from an ancient mine in the Taurus Mountains and from archeological artifacts from that region, CAL researchers found evidence that the mine was a source of tin during this period. As part of a collaborative agreement with researchers at the National Research Institute for Cultural Properties in Tokyo, CAL made preparations for the exchange and shared use of lead isotopic analytical data. Within the framework of the same agreement, researchers initiated a joint research project on the technological development of Jomon ware, a prehistoric pottery from Japan. Other examples of ceramic technology research include work on prehistoric figurines from the Dolne Vestonice site in Czechoslovakia.

Using neutron activated autoradiography along with more conventional methods of examination, CAL's research in art history focused on the work of the 19th-century American artist Albert P. Ryder. CAL staff, in collaboration with curatorial and conservation staff at the National Museum of American Art examined nine paintings by this artist as part of the scholarly preparations for a special exhibit of his work planned for 1990.

Conservation Science - CAL's conservation science program pursues research in the chemical and physical deterioration processes of materials in museum collections and the rates that affect these processes. By specific Smithsonian requests, CAL scientists perform chemical, physical, and other technical analyses for conservators and curators Institution-wide.

In a cooperative program with the National Gallery of Art and the Canadian Conservation Institute, CAL scientists examined the mechanical effects of temperature, relative humidity, shock and vibration on paintings in transit. The results will be discussed at an international conference on art in transit at the Tate Gallery in London in 1991.

CAL scientists implemented a research program to study the effects of cleaning solvents on oil paint layers. In order to prepare paint standards for this research, CAL scientists and conservators examined the historical evidence for various methods of oil extraction and purification and obtained adequate supplies of appropriately treated oils and traditional pigments.

CAL researchers examined large numbers of historical wet collodion glass negatives to systematically characterize manufacturing techniques and to identify materials. This work precedes characterizing the deterioration processes of these plates. It will lead to recommendations for conservation treatment, printing, exhibition, storage, and handling of these materials.

In a new biogeochemistry program, CAL scientists studied lactating and nursing habits in a hunter-gatherer society by applying isotope spectrometry to individual amino acids derived from protein extracted from archeological human bone. The study of ancient disease patterns by identifying specific antibodies in archeological skeletal material continued.

Researchers concerned with the characterization and kinetics of polymer degradation brought the research on the aging of cellulose into a second stage and evaluated mildly accelerated aging conditions for their appropriateness in testing the long-term behavior of cellulosic materials. A new project in this area addresses the urgent need for research into the degradation of modern polymeric materials, which have been used in the manufacture of many artistic and historic objects collected over the last century.

Conservation Technology: Research and Treatment - CAL conservators pursue a variety of projects aimed at the development, improvement, and testing of treatment technology. They also provide technical advice and assistance to Smithsonian bureaus with problems requiring their special expertise.

Besides being involved in research of solvent action on paint films, CAL's painting conservators developed innovative preparation techniques for cross-sections and thin-sections from paintings. This technique allows more economical use of microscopical samples for examination and analysis. The conservators provided treatment assistance to the National Air and Space Museum (NASM), the Cooper-Hewitt Museum, and the National Museum of American History (NMAH), including the study and treatment of Thomas P. Dewing's paintings that adorn the 100,000th Steinway piano.

Paper conservators continued evaluating the effects of treatments that involve washing in various solvents, including water, and drying under various conditions on the optical, chemical, and mechanical properties of paper. This type of work also

included coated papers, which by their very nature present special problems. Paper conservators assisted the Smithsonian Institution Archives by surveying collections of watercolors, paintings on paper, and drawings. Similarly, they surveyed collections of botanical drawings and gouache paintings on photographs in the National Museum of Natural History (NMNH). Conservators also provided treatment assistance to the National Museum of American Art (NMAA) and NMAH.

Research in textile conservation included developing protocols for the use of modern synthetic dyes to match historic natural dyes for restoration purposes and the effects of pesticides on the lightfastness of textile dyes. Assistance to other bureaus included treatment of a 30-foot parabolic reflector for NASM and development of a method for removing pencil marks from a color field painting for NMAA. In an international assistance project made possible through funding by the Asian Cultural Council, CAL provided expert advice in situ for museums in Singapore, Jakarta, and Manila.

CAL's objects conservators investigated the effectiveness and appropriateness of various consolidants for the mechanical strengthening of fragile archeological plasters. Another research project examines the historical use of zinc as a sculpture medium. The conservators surveyed objects in Jakarta in preparation for the "Java Seas" exhibition at NMNH and performed treatments for the Anacostia Museum and the Arts and Industries Building. One objects conservator provided on-site conservation and training assistance for the excavation at Harappa, Pakistan.

The research interests of CAL's furniture conservators centered on characterizing historic furniture finishes and the abrasiveness of various packing materials to furniture finishes. Treatment assistance was provided to the Cooper-Hewitt Museum and NMAH.

Conservation Training - CAL offers a variety of training opportunities in conservation at different levels of expertise and experience. The graduate-level furniture conservation training program finished its third year, with the first class completing its course work. The students of this class now serve a one year internship at various museums as a last requirement before graduation. Meanwhile, CAL selected seven new students from a large number of applicants to form the second class, which started in late FY 1989.

In the second year of the joint CAL - Johns Hopkins University program for graduate training of conservation scientists, CAL staff organized and taught two semester courses on the properties of inorganic materials in museum objects and on the principles and practices of conservation. The three students enrolled in the program have selected research topics for their doctoral theses: the degradation of silk, the nondestructive detection of interior defects in wooden artifacts, and the deterioration of archeological glass. On a CAL postdoctoral fellowship in conservation science, a scientist is studying the nature of coatings on Benin bronzes in the National Museum of African Art (NMAfA) collections and their implications for the conservation of these objects.

CAL awarded six recent graduates from academic conservation training programs postgraduate internships in the Smithsonian; two of these interns worked at CAL, while the other four served at various Smithsonian museums. CAL also hosted other interns at less advanced levels of experience: six students spent summer internships with CAL's textile and paper conservators; two students in academic conservation training programs spent internships at CAL during the year; and two preprogram interns who

spent the year at CAL were subsequently accepted into academic training programs. A chemist from the National Museum in Jakarta worked for three months with the textile conservator.

Again, CAL organized several advanced training courses for conservators in various specialties. The eight courses outside the furniture conservation training program included: Conservation of Earth Science Collections; Theory and Applications of the Paper Suction Table; Color Theory and Measurement; Materials Used for Display of Collections; Analysis of Historic Textile Dyes; Textile Pest Control; and the Use of Modern Textile Dyes in Conservation. In addition, the four courses in this year's furniture conservation training program curriculum were available to professionals outside the program.

Information - CAL's information program provides specialized bibliographic and reference research support to professionals in the Smithsonian Institution and other museums. It maintains current information files on conservation and archaeometry literature, technical information, commercial products data, and internally generated reports. Users can access data on CAL Conservation Reports electronically through the Smithsonian Institution Bibliographic Information System (SIBIS). CAL maintains on-line access to the conservation literature data base of the Bibliographic Conservation Information Network (BCIN), which includes the Art and Archaeology Technical Abstracts (AATA), and to the materials information data base of the Materials Conservation Information Network (MCIN). Both BCIN and MCIN are parts of the international Conservation Information Network (CIN), a cooperative network founded by the Getty Conservation Institute in cooperation with CAL, the Canadian Conservation Institute, the International Center for Conservation (ICCCROM) in Rome, the International Council of Museums (ICOM) in Paris, and the International Council of Monuments and Sites (ICOMOS), also in Paris. CAL devotes considerable staff effort to integrate these institutional data bases, which are available to conservators worldwide. New accessions further increased CAL's unique collection of reprints from the professional literature in conservation, archaeometry, and related subjects, and this resource now contains about 22,000 reprints.

The public information program continues to provide information in response to questions from an audience ranging from the general public to conservation professionals. On the average, CAL answers 60 questions from the general public and 25 from professionals each month. The CAL Information staff also performs an average of 12 data base searches per month, half of which are done on request from other CAL staff, one-quarter for other Smithsonian professionals, and one-quarter for professionals in museums outside the Institution. In addition, CAL has given out more than 1,300 copies of its 165-page text Approaches to Pest Control in Museums in answer to questions and as supplements to courses since its publication in FY 1986.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These derive from the fees charged to participants in the advanced conservation specialist programs sponsored by CAL. These fees partially offset the expenses incurred in organizing the courses. CAL received grants from Scholarly Studies and Research Opportunities funds provided support for a number of ongoing research projects.

OFFICE OF EXHIBITS CENTRAL

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	47	1,886	-	-	-	39	-	-	-	-
FY 1990 -Estimate	46	1,937	-	-	-	150	-	-	-	-
-Base	46	1,972								
FY 1991 Estimate	46	2,006	-	-	-	150	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	46	0	46
11 Personnel Compensation.....	1,427	28	1,455
12 Personnel Benefits.....	256	6	262
21 Travel.....	6	0	6
22 Transportation of Things.....	1	0	1
23 Rent, Communications & Utilities.....	1	0	1
25 Other Services.....	65	0	65
26 Supplies & Materials.....	164	0	164
31 Equipment.....	52	0	52
Total	1,972	34	2,006

Analysis of Increase

Necessary Pay.....	34
Program Funds.....	0

ABSTRACT - The Office of Exhibits Central (OEC) is essential to the success of many Smithsonian exhibitions. OEC's specialists and up-to-date facilities offer expertise in all phases of exhibit design and production to Smithsonian units with little or no exhibition capability. Most OEC projects are unique and involve the exhibition of objects from the Institution, other museums, and private collections.

The Smithsonian is not seeking additional funds for FY 1991 programmatic increases for the Office of Exhibits Central. The Institution requires \$34,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The Office of Exhibits Central provides comprehensive service and expertise in exhibition design and production. "Inside Active Volcanoes: Kilauea and Mount St. Helens," produced in FY 1989 for the Smithsonian Institution Traveling Exhibition Service (SITES), provides a sample of the range of OEC work:

- Design. OEC designed every feature for the SITES' traveling exhibition and for the installation in the Evans Gallery at the National Museum of Natural History, from exhibit cases to interpretative text panels, and from gallery wall colors to the placement of objects in cases.
- Editing. OEC received large portions of the script in outline form. The OEC editor researched, using materials provided by the curators, and wrote or rewrote the majority of the copy. In addition to shaping the script to support the photographs and objects, OEC edited and structured the script to be informative to a lay audience.
- Graphics. OEC's graphics laboratory silk-screened labels, text panels, diagrams, and maps and mounted photographs.
- Models. OEC's model shop fashioned two full-scale dioramas, one to depict the destruction caused by the Mount St. Helens eruption incorporating a tree stump from the actual blast zone, and one to depict a forest flooded with lava from Kilauea. The model shop also produced a scale model of a lava lake at Kilauea with cutaway view, and a cutaway model of Kilauea showing the dikes along the rift zone. The model shop also prepared custom brackets and mounts for all the artifacts.
- Fabrication. OEC built all the exhibit furniture, including text and photo panels, wall-hung vitrines, freestanding exhibit cases, pedestals, and all the acrylic vitrines. OEC also built shipping containers with custom interiors that will ensure the safety of the objects and exhibit components during travel.

Although "Inside Active Volcanoes" was the largest and most complex project in FY 1989, OEC completed more than 200 other projects, supporting nearly every Smithsonian office and bureau. These projects in FY 1989 included:

- Anacostia Museum. The OEC model shop made three patent models based on original patent drawings and three mannequins for the "The Real McCoy: African-American Invention and Innovation, 1619-1930" exhibition. OEC also edited the exhibit script as well as designed and edited the gallery brochure.
- National Museum of African Art. OEC designed the installation for the "Gold of Africa" exhibition.
- National Museum of American History. The OEC model shop created 20 lifelike mannequins for the "Men and Women: A History of Costume, Gender, and Power" exhibition. One challenge was to capture a sense of action in a figure

posed riding a bicycle. Each mannequin has a face cast from life (most of the faces were cast from OEC staff volunteers).

- National Zoological Park. OEC's taxidermy specialist has been working on an unusual project for the Zoo's Conservation and Research Center. The Zoo has been breeding black-footed ferrets for reintroduction into the wild. Before they can be released, the ferrets have to learn to fear predators. To that end, OEC has mounted a taxidermied badger on a radio-controlled model truck chassis, which the Zoo will use to teach the ferrets to run from such predators. OEC has also designed a taxidermied owl posed in flight to teach the ferrets about winged predators.
- Reading Is Fundamental (RIF). The RIF program conducts an annual contest for which school children submit posters promoting reading. OEC matted and framed posters and produced labels and a text panel for the Smithsonian exhibition of winning entries.
- Resident Associate Program (RAP). OEC produced two exhibits for RAP. For "RAP Commissions Art," OEC framed original prints and produced text panels and labels. For "Discover Graphics," OEC matted and framed the works on paper and produced the exhibit text panel and labels.
- Smithsonian Institution Traveling Exhibition Service (SITES). In addition to the Volcano exhibit, OEC designed, edited, and produced 14 new exhibits for SITES. "Facing the Gods: Ritual Masks of the Himalayas" was complete with wall-hung and freestanding cases for 75 masks. Because the masks do not travel in their exhibit cases, each mask was permanently mounted on a fabric-covered panel to limit direct handling during the tour and packed in custom shipping containers. OEC adapted "Badges of Pride: Symbols and Images of American Labor" from an exhibit at the Museum of American History. The touring exhibit included 30 interpretive text panels and about 75 artifacts. OEC designed, edited, produced, and crated this exhibition for SITES. OEC also designed, edited, and produced "Plains Indian Arts: Continuity and Change," an exhibit comparing 19th-century and contemporary native-American objects. Staff designed and fabricated custom brackets, mounts, and packing for each artifact.
- "Documents for Liberty: The Bicentennial of the French Revolution, 1789-1989." For this special project of the Office of the Assistant Secretary for Museums, OEC designed the display in the Arts and Industries Building for two French documents, including banners and a gallery brochure. OEC also adapted exhibit cases, built custom mounts for the documents, and silk-screened the text.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Proceeds from the sale of the OEC book A Freeze-Dry Manual through the Smithsonian Institution Press and reimbursements from internal Smithsonian units provide these funds. OEC uses the funds to purchase supplies, materials, and services in support of OEC activities; to defray costs associated with special events; and to supplement travel expenses.

SMITHSONIAN INSTITUTION TRAVELING EXHIBITION SERVICE

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	13	665	8	304	24	2,135	-	437	-	64
FY 1990 -Estimate	17	793	8	314	24	1,835	-	518	-	10
-Base	17	808								
FY 1991 Estimate	18	874	8	374	24	1,543	-	449	-	4

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	17	1	18
11 Personnel Compensation.....	407	53	460
12 Personnel Benefits.....	102	13	115
21 Travel.....	15	0	15
22 Transportation of Things.....	72	0	72
25 Other Services.....	129	0	129
26 Supplies & Materials.....	3	0	3
31 Equipment.....	80	0	80
Total	808	66	874

Analysis of Increase

Necessary Pay.....	66
Program Funds.....	0

ABSTRACT - The Smithsonian Institution Traveling Exhibition Service (SITES) brings the National Mall to museum-goers beyond Washington, D.C. Drawing upon the collections and research expertise of the Smithsonian, SITES circulates exhibitions around the world to museums large and small, and to libraries, schools, community centers, university galleries and municipal buildings. The same topics that inform Smithsonian exhibitions--art, natural history, archeology, anthropology, design, popular culture, science and technology--also are explored in SITES exhibitions.

As soon as funding becomes available, SITES plans to increase the availability of its programs among American audiences that have not been able to benefit from the Smithsonian's presence beyond the National Mall. Included in this challenge will be a commitment to develop exhibitions especially for smaller, budget-limited museums, many of them in non-urban areas. Diverse minority audiences also will be intended beneficiaries, for many of the nation's ethnic groups remain unaffiliated with the institutions that SITES traditionally has served. Additional Federal appropriations will be critical to SITES' ability to expand the Smithsonian's presence to these new places and groups, however, since without an increase SITES cannot offer traveling exhibitions at affordable rates. By way of illustration, SITES estimates that an increase of 24 workyears and \$1,400,000 would be required to offer low-cost exhibitions by reducing the participation fees that SITES now must charge to host museums. For FY 1991, the Institution requires \$66,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - SITES is a high-visibility outreach arm of the Smithsonian. Its exhibitions reach an estimated 11 million people every year. Host museums and educational institutions book SITES exhibitions for periods of four to eight weeks by paying a preestablished rental fee as well as one-way shipping costs and insurance. Every SITES exhibition includes curatorial and registrarial information, handling and installation instructions, publicity materials, publications, and recommended educational activities and public programs.

SITES' primary commitment is to the circulation of Smithsonian-based exhibitions and research. In FY 1991, for example, SITES' program, funding permitting, will include:

- a National Zoo exhibition about human perceptions of and attitudes toward animals;
- a second version of the Anacostia Museum exhibition "Climbing Jacob's Ladder," which surveys the growth of black churches in America (first version is scheduled to begin tour in April 1990);
- an Anacostia Museum exhibition on African-American invention;
- a National Museum of American History exhibition on the relationship between fashion, gender, and social roles;
- a National Air and Space Museum exhibition about space transportation technology;
- a traveling version of the National Museum of Natural History's Columbus Quincentennial Exhibition, "Seeds of Change";
- a National Portrait Gallery exhibition surveying the work of Winold Reiss;
- a Sackler Gallery exhibition by one of India's leading photo-journalists;
- an exhibition based on the Office of Folklife Program's activities with groups in urban Philadelphia.

Some SITES programs will originate at non-Smithsonian museums or with private collectors. Projects from outside the Smithsonian are accepted into SITES' schedule after being reviewed by staff teams, which evaluate proposals based on the needs and

interests expressed by host museums in the field, and on the availability of collections that might not be represented by the Smithsonian's own holdings. Depending on the availability of funds in FY 1991, such programs will include an international loan exhibition from the Soviet Union entitled "Moscow: Treasures and Traditions"; an exhibition designed to address geographic illiteracy and co-sponsored with the National Geographic Society; an exhibition about America's mounting garbage crisis; an exhibition entitled "Contrasts," that looks at the impact of industrialization on centuries-old traditions in Puerto Rico; and "Coming of Age in America," an exhibition on the aspirations and realities faced by the Nation's ever-growing, elderly populations.

At any given time, more than 120 SITES exhibitions are in circulation around the country or globe, or are in some stage of planning and production. Annually, the number of new exhibitions fluctuates from between 25 and 30. Smithsonian magazine, by publicizing the locations of certain SITES shows in each issue, helps to increase the Institution's national audience. SITES also markets exhibitions directly to some 9,000 institutions and individuals through Update, its annual catalogue of available exhibitions, and through a quarterly newsletter called Siteline.

During FY 1989, 92 SITES exhibitions traveled in the United States to 200 cities in 46 states and the District of Columbia. Total exhibition bookings came to 330 in FY 1989, including 3 bookings outside of the United States.

Alabama 5	Mississippi 4
Alaska 3	Missouri 8
Arizona 1	Montana 7
Arkansas 3	Nebraska 2
California 14	Nevada 3
Colorado 10	New Hampshire 1
Connecticut 9	New Jersey 4
District of Columbia 5	New Mexico 3
Florida 20	New York 20
Georgia 12	North Carolina 9
Hawaii 2	Ohio 23
Idaho 2	Oklahoma 5
Illinois 2	Oregon 3
Indiana 8	Pennsylvania 11
Iowa 7	Rhode Island 3
Kansas 6	South Carolina 5
Kentucky 8	South Dakota 1
Louisiana 1	Tennessee 12
Maine 1	Utah 2
Maryland 6	Virginia 6
Massachusetts 12	Washington 6
Michigan 16	West Virginia 5
Minnesota 4	Wisconsin 8

These numbers do not total 330 because some exhibitions were double-booked for extended showings in particular cities.

Again depending on the availability of funds, SITES also tries to maintain an international program, sharing collections from the Smithsonian and other sources in addition to exhibition expertise with people outside the U.S. In FY 1989, four SITES

exhibitions traveled abroad. Two exhibitions went to Canada: "Child to Child: American-Soviet Children's Art Exchange," and "Art of Botany." "Power and Gold: Jewelry from Indonesia, Malaysia and the Philippines" toured Hong Kong and Taipei, Taiwan.

Apart from its exhibition services, SITES regularly advises colleagues at other museums on professional topics such as shipping and insuring artifacts, developing public programs, and handling exhibit installation, security, design and contract matters. Often these issues are covered in SITES' Workshop Program, which brings together representatives from institutions slated to host SITES exhibitions. Museum professionals with like concerns thus have an opportunity to pool their resources, sharing program ideas, technical information, and presentation strategies that heighten audience interest and involvement.

To expand further its service capabilities, SITES has initiated a program to underwrite exhibition tours with State Humanities Councils. SITES' activities in New Mexico set the model for this partnership. There, the State Council agreed to fund participation and shipping fees for a group of host museums willing to book SITES exhibitions consecutively. Institutions throughout New Mexico that independently could not have afforded a SITES program thus not only scheduled a show but also created accompanying public programs by pooling their limited funds.

Notwithstanding the inroads SITES has made in expanding the Smithsonian's profile, diverse segments of the American public continue to have little if no formal relationship to the Institution. In the face of a no-growth budget, SITES will find it impossible to extend the benefits of the Smithsonian's exhibition offerings to people of all ages and backgrounds, thus strengthening the Smithsonian's role as a national educational resource.

At present, SITES' total operating budget consists of two general categories: direct subsidies and recoverable costs. Direct subsidies involve non-reimbursable expenses from three funding sources: a Federal appropriation; a limited amount of nonappropriated Smithsonian Trust fund support; and outside grants and contracts. SITES must recover all remaining operating costs through participation (rental) fees that are charged to exhibitors. SITES can only reduce exhibition participation fees and in turn respond to the program needs and financial realities of resource-poor institutions if alternative funding to offset these costs becomes available.

SITES brings the Smithsonian to millions of visitors beyond the Nation's capital. SITES hopes to ensure that each of these visitors benefits fully and directly from the Institution's program services.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - The bulk of SITES' operating budget comes from participation fees collected from museums and other recipients of traveling exhibitions. These funds, supplemented by an allotment, support exhibition development costs including salaries and benefits, exhibition production, publications, materials, outside specialists, and contractual services. The Smithsonian also supports certain SITES exhibitions on a selective basis with monies from the Special Exhibition Fund.

Restricted Funds - Individuals, organizations, and corporations donate gifts and foundation grants for specific SITES projects. During FY 1989, SITES received grants

from the Goodwill Games for "Moscow: Treasures and Traditions"; from the MacArthur Foundation for a Spanish language version of "Tropical Rainforests: A Disappearing Treasure"; from MCI Communications Corporation for "Inside Active Volcanoes: Kilauea and Mount St. Helens"; and from the American Association of Retired Persons for "Coming of Age in America."

Government Grants and Contracts - Various levels of government provide funds for support of specific exhibitions. A contract with the U.S. Fish and Wildlife Service, for example, recently enabled SITES to circulate a National Museum of American History exhibition about duck stamps, entitled "The Legacy Endures."

MUSEUM SUPPORT CENTER

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	35	4,405	-	-	-	17	-	-	-	-
FY 1990 -Estimate	42	4,263	-	-	-	59	-	-	-	-
-Base	42	4,290								
FY 1991 Estimate	42	4,316	-	-	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	<u>Base FY 1990</u>	<u>Proposed Adjustments</u>	<u>Est. FY 1991</u>
FTE Allocation.....	42	0	42
11 Personnel Compensation.....	865	20	885
12 Personnel Benefits.....	209	6	215
21 Travel.....	14	0	14
23 Rent, Communications & Utilities.....	4	0	4
24 Printing & Reproduction.....	1	0	1
25 Other Services.....	202	0	202
26 Supplies & Materials.....	89	0	89
31 Equipment.....	2,906	0	2,906
Total	4,290	26	4,316

Analysis of Increase

Necessary Pay.....	26
Program Funds.....	0

ABSTRACT - The Museum Support Center (MSC), located in Suitland, Maryland, adjacent to the Institution's Suitland Facility, provides a state-of-the-art facility for the care, conservation, and storage of the Institution's collections. The conservation facilities at the MSC include the Conservation Analytical Laboratory and conservation laboratories for the National Museum of Natural History/Museum of Man and the National Museum of American History. The collections storage area at the MSC occupies four discrete sections (or pods) and provides three types of storage space: collections storage in cabinets; "wet" collections storage on open shelving for biological specimens in alcohol; and "high-bay" storage for very large objects. (For

FY 1990 and prior years, the Museum Support Center budget line-item appeared in the Special Programs section.)

For FY 1991, the Institution is not requesting a programmatic increase for the Museum Support Center. The FY 1991 estimate continues the FY 1990 level of funding for the purchase and installation of collections storage equipment and components (\$2.849 million); the preparation and transfer of Initial Move collections to the MSC, including a program to evaluate the effectiveness of cleaning techniques to remove asbestos contamination from museum objects prior to their move (6 workyears and \$404,000); and the ongoing administration, information management, and building management services at the MSC (36 workyears and \$1.063 million). As part of the FY 1991 level of funding, the Institution requires \$26,000 for Necessary Pay for existing staff funded in this line-item. Beginning in FY 1991, the Institution requests that funding for MSC collections storage equipment and for MSC Move costs be available until expended (for FY 1991, this no-year request equals a total of \$3.253 million).

PROGRAM - The Institution's Museum Support Center provides state-of-the-art facilities for the conservation and preservation of museum objects; conservation training; and the storage of museum collections. The unique design of the MSC creates two wings, one for laboratories and one for storage, on either side of a central corridor.

Conservation facilities occupy a significant portion of the laboratory wing, where activities include conservation treatment, scientific analysis, and training. The Conservation Analytical Laboratory (CAL), the Anthropology Conservation Laboratory of the National Museum of Natural History (NMNH), and some of the facilities of the Division of Conservation of the National Museum of American History (NMAH) are at the MSC. The Museum Support Center branch of the Smithsonian Institution Libraries, one of six conservation libraries in the world and one of only two in this country that provide a reference service on conservation, maintains a collection of more than 15,000 books and 180 periodical titles.

The Smithsonian Oceanographic Sorting Center, a specialized research and service unit of the National Museum of Natural History, also occupies space in the laboratory wing. The Sorting Center sorts and classifies marine animals and plants which oceanographic expeditions collect, and then distributes these specimens to scientists around the world.

In late FY 1988, the National Museum of Natural History established a new Laboratory for Molecular Systematics at the Museum Support Center. This laboratory builds upon the Museum's broad expertise in systematic and evolutionary biology and incorporates historical and ecological perspectives. It will enable molecular study of the genetics of organisms by the largest single team of systematic biologists in the world. The laboratory will focus on DNA molecular analysis.

The storage wing consists of four storage pods, each approximately the size of a football field and 28 feet high. Collections stored in cabinets on three levels of concrete decks will occupy approximately five-eighths of the total storage space (Pods 1 and 2, and a portion of Pod 4). In addition, Pod 3 provides open shelving for storing "wet" collections (those in alcohol), and a portion of Pod 4 will allow "high-bay" storage of very large objects.

The move of millions of objects and specimens to the Museum Support Center is unprecedented in the museum world. The volume, characteristics, and variety of the collections and the distance of the transfer pose special challenges. The Smithsonian coordinates each phase of the Move using an automated project management system for highly complex projects. This system provides management with automated information on relevant variables that affect the complex schedules, enabling management to update that information easily and quickly. In addition, the MSC Move staff determines the specific methods of packaging and modes of transport appropriate to the particular collections and objects involved. The Institution currently projects that the Initial Move efforts will continue at least through FY 1996.

Early in the MSC planning process in the late 1970s, the Smithsonian established the concept of the Initial Move to ensure a systematic transfer of millions of designated objects from the National Museums of Natural History and American History to the Museum Support Center over a multi-year period. The Smithsonian intends to continue procuring Initial Move collections storage equipment to house these designated collections. The Initial Move collections will occupy approximately two-thirds of the MSC storage space, and the remaining third will be available for future Growth.

I. Museum Support Center Collections Storage Equipment

Current Status of MSC Collections Storage Equipment Reprocurement (December 1989)

- In FY 1989, the Institution and the General Services Administration (GSA), acting as the Smithsonian's agent, made significant progress in the reprocurement of collections storage equipment for MSC. GSA awarded the new contract for the general construction of the structural deck system, mechanical, electrical, and sprinkler systems on October 13, 1988, to the Grunley Construction Company, Inc. The new contractor resumed construction on November 11, 1988. The Smithsonian took occupancy of Pod 1 on June 19, 1989, and of Pod 2 on November 4, 1989. The contractor expects to complete Pod 4 by February 28, 1990.

During FY 1989, GSA also issued four of the anticipated eight bid solicitations for collections storage equipment. These four packages will provide the majority of the storage equipment required to relocate the Initial Move high-density collections to MSC:

- Shelving Cabinets: Installation of shelving cabinets began on July 7, 1989. The contractor had installed 633 shelving cabinets by December 31, 1989.
- Drawer Cabinets: Installation of drawer cabinets began in October 1989. The contractor will have installed 856 drawer cabinets by January 31, 1990.
- Insect Cabinets: GSA awarded the contract for insect cabinets on June 9, 1989. Installation of insect cabinets will begin in March 1990.
- Botany Cabinets: GSA awarded the contract for botany cabinets on June 13, 1989. Installation of botany cabinets will begin in June 1990.

GSA plans to solicit the final four bids for collections storage equipment--for 96- by 50-inch large drawer and shelving cabinets, cantilever shelving units, compactor screens, and specialized fencing storage units--during calendar year 1990. GSA anticipates the final completion of manufacture and installation of all storage equipment packages during 1993.

GSA currently estimates the reprourement costs, including the construction of decking and utilities and the manufacture and installation of Initial Move high-density storage equipment for Pods 1, 2, and 4, to be approximately \$27.7 million. A total of \$27.4 million, including funding which the Smithsonian has already transferred to GSA through FY 1989 (\$24.6 million), and funding provided in the FY 1990 appropriation (\$2.849 million), is available for this reprourement. Assuming no change in the GSA estimate, the Institution will require approximately \$300,000 in FY 1991 to complete the reprourement. (At the present time, unit price costs for the four types of storage equipment for which contracts have been awarded are firm, excluding escalation; the remaining four are still based on estimates. Under the terms of the contracts, GSA has built in annual escalation costs for equipment not installed within one year after contract award, limited to an annual maximum increase of 10 percent of the Producer Price Index for filing cabinets and cases and of 10 percent of the Engineering News Record Skilled Labor Index for freight and installation.)

MSC Collections Storage Equipment Requirements After the Completion of the Reprourement - Following the completion of the reprourement, the Institution must address the three remaining requirements for MSC collections storage equipment that had been deferred from previous years to finish the reprourement: the design, purchase, and installation of (1) the Initial Move "high-bay" storage equipment for Pod 4; (2) the balance of the "wet" storage equipment for Pod 3; and (3) the balance of the collections storage cabinets for Pods 1, 2, and 4.

"High-Bay" Collections Storage Equipment: The Smithsonian deferred the purchase of the Initial Move "high-bay" storage equipment for several years in order to complete the reprourement of the high-density storage equipment for the Initial Move. In FY 1991, the Institution plans to design the "high-bay" system, which will store such items as totem poles, whale skeletons, rickshaws, weaving looms, and furniture. This storage equipment will consist of industrial cantilever shelving racks approximately 24 feet high; the necessary mechanical, electrical, and plumbing systems; and material-handling equipment to access these collections. Both NMNH and NMAH need this type of storage equipment.

Following the preparation of the final design of the system, the Smithsonian will contract for the components of the "high-bay" system and its installation. The current preliminary cost estimate of the final design and installation of the "high-bay" storage system, including escalation to FY 1991 price levels, exceeds \$2.0 million. This funding level is based on the estimated cost of this equipment in FY 1985, adjusted for escalation. The Institution will refine this cost estimate after the final design is complete. Actual cost for the "high-bay" storage equipment may vary with the actual bids received at the time of procurement and the effective inflation rate for the city of the bidder during bid submission.

"Wet" Collections Storage Equipment for Growth Areas in Pod 3: The Smithsonian completed the Initial Move of "wet" collections in 1985. Within the next six years, the Institution plans to purchase additional "wet" storage equipment to occupy the balance of the Growth storage areas of Pod 3. The installation of the additional "wet" storage system will require metal columns, catwalks, and all utilities for the three-level, self-supporting structure of open shelving. The first phase of this work will require the services of an architectural/engineering firm to provide a design and a procurement cost estimate.

The present preliminary estimate for completing the Growth storage equipment in Pod 3 ranges from \$6.1 to \$8 million. The \$6.1 million estimate is based on the cost data for the design, management and inspection, and construction costs of the first part of the "wet" storage system installed in 1983, adjusted to include inflation at the rate of 6 percent per annum. The \$8 million estimate also takes into account that the storage equipment for the Growth areas in Pod 3 will be more complicated than the original equipment, resulting in higher costs. Following the design work of an architectural/engineering firm, the Institution can provide a more accurate estimate of total cost, including an appropriate cost for inflation.

Collections Storage Cabinets for Growth Areas in Pods 2 and 4: After the completion of concrete decks and installation of Initial Move storage equipment in Pods 2 and 4, the Institution will begin to purchase and install storage equipment for the Growth areas in these two pods. At this time, the Institution cannot determine the specific number of the various types of cabinets, drawers, and other equipment it will require, nor can it determine the specific timetable for the installation of the Growth storage equipment. The Institution currently anticipates, however, that the purchase and installation of some of this storage equipment could begin as early as FY 1991.

Preliminary cost estimates for the procurement of collections storage equipment for the high-density Growth areas in Pods 2 and 4 total as much as \$11.2 million, without taking escalation into account. According to some of the cabinet manufacturers, escalation over the period of one year can be as high as 15 percent for the cabinets alone. Escalation on the freight charges and the installation costs for the storage equipment will further increase these costs. In an effort to reduce these costs, GSA has written the current collections storage equipment procurement documents for the Initial Move to permit it to purchase many, if not all, of the cabinets for Growth space in Pods 2 and 4 on the same contracts. These contracts provide for unit price costs for cabinets, shelves, and drawers as well as for freight and installation. As indicated previously, these contracts also provide for annual escalation, limited to a maximum of 10 percent, based on the Producer Price Index for filing cabinets and cases and on the Engineering News Record Skilled Labor Index for freight and installation. These provisions will be in effect for a period of five years, which began in calendar year 1989. If the Smithsonian cannot provide GSA with sufficient funding to procure these cabinets and their components by the end of each of these contracts, new bid solicitations will be required. New cost estimates will be required as well, because the cabinets and their components will probably cost more.

In addition to the purchase of cabinets for the Growth space, the Institution eventually will need new steel cabinets to replace a large number of existing wood frame cabinets and drawers from the Museum of Natural History that it is relocating to the MSC as part of the Initial Move. The new cabinets, which will be six inches deeper than the existing cabinets, will permit the Smithsonian to make more efficient use of the available storage space at the MSC. Moreover, since the acid in the wood frame cabinets is deleterious to many of the objects stored in them, replacement with new metal cabinets will provide a better long-term storage environment. Cost estimates for this replacement total as much as \$4.8 million without taking escalation into account.

In summary, the Institution estimates that the procurement of new cabinets for Growth high-density areas and the replacement of the existing wood frame cabinets will require as much as \$16 million (in 1989 dollars), without taking escalation into

account. Assuming escalation calculated at 10 percent per year and procurement of these cabinets in FY 1991 and FY 1993, the cost to complete the high-density storage equipment (after the Initial Move) will total \$21.4 million. Two factors that may cause this preliminary cost estimate to fluctuate are: (1) inflation; and (2) the actual numbers and types of cabinets, shelves, and drawers procured, if they differ from the ones predicted in the preliminary cost estimates, since they are based on the Initial Move procurements.

Future Funding Requirements for MSC Collections Storage Equipment: Based on the above projections, the Institution currently estimates that it will require a total of approximately \$24.1 to \$31.4 million to complete the equipping of the Museum Support Center. During FY 1991, the Institution will use the balance of the equipment funding of \$2.849 million to begin to purchase the remaining storage systems and cabinets. Beginning in FY 1992 and continuing through FY 1995, the Institution expects to request a level of funding of \$8 million each year to continue the purchase of this equipment.

Need for No-Year Funding for MSC Storage Equipment: Beginning in FY 1991, the Smithsonian requests no-year funding for the design, procurement, and installation of collections storage equipment for MSC. No-year funding will permit flexibility in the procurement of the remaining storage equipment, especially for "high-bay" storage in Pod 4 and the "wet" storage equipment in Pod 3. Because of the time required to bid and award contracts for major projects such as the MSC storage equipment systems, the procurement process may exceed the period of availability of funds in a one-year appropriation.

After the Smithsonian receives its appropriation, it must prepare a scope of work for the design of the equipment and allow time for potential contractors to submit bids. The Institution must then review and evaluate these bids and award the design contract. Document preparation takes time; then design takes several months, following which the Institution prepares the designer's documents for the storage equipment as solicitation documents to procure the system. The Smithsonian must then allow for appropriate bidding time by the suppliers who desire to manufacture and install the storage equipment, which can take several months, depending on the system being procured.

The Institution then reviews and evaluates the bids to perform this work and awards the procurement contract. The labor-intensive and time-consuming nature of this process makes it extremely difficult to obligate funding within a single fiscal year. The provision of no-year funding for the storage equipment project will allow the design, procurement, construction, and installation processes to proceed smoothly without the pressures of hasty year-end obligations to avoid the loss of funding. In addition, no-year funding will permit the most efficient and cost-effective use of funding for procurement of the remaining phases of storage equipment for the Growth areas at the MSC. The Institution then will procure each phase or portions of each phase when needed.

II. Move of the Collections to the Museum Support Center

Current Status of the Move of Collections to the MSC (December 1989) - From FY 1983 to the present, the MSC Move staff has transferred in excess of 313,700 specimen lots to the "wet" collections storage equipment in Pod 3. While problems in procuring the storage equipment for the Initial Move into Pods 1, 2, and 4 have delayed the permanent relocation of other collections to the MSC, the Institution has

continued to prepare collections and to move selected ones to temporary storage locations at the MSC until their permanent storage space becomes available. These collections from the National Museum of Natural History include:

- more than 197,500 archeological objects (representing 25 percent of those collections) and 17,500 ethnological objects from the Department of Anthropology;
- more than 4,198,000 insect specimens from the Department of Entomology;
- more than 36,700 petrology and meteorite specimens from the Department of Mineral Sciences;
- more than 3,000,000 specimens from the Department of Paleobiology;
- 213,800 specimens from the Department of Botany, including diatoms and algae;
- 27,500 specimens from the Department of Invertebrate Zoology.

The MSC Move staff has inspected these objects for pests and conservation problems and has properly stabilized these collections. The collections relocated to MSC are in less-crowded and better-controlled conditions than collections stored in most other Smithsonian storage areas. As a result, they have far greater potential for long-term preservation and use.

In FY 1989, the staff cleaned, prepared, and packed 1,500 historic toys from the Museum of American History's Division of Domestic Life. These specimens are in temporary storage at the Garber Facility until storage equipment is available at the MSC. Staff also continued to move collections from the Departments of Botany, Entomology, Invertebrate Zoology, and Vertebrate Zoology to temporary MSC storage locations.

The Move technicians will continue in FY 1990 to prepare and pack collections from the Museum of American History and will store them temporarily at the Suitland Facility. The MSC Move will hire conservators to determine appropriate supplies and methods for stabilizing and packing the collections. Late in FY 1990, the Move staff will begin to prepare and pack the collections of other departments. These collections will remain in the buildings currently storing them until sufficient permanent storage equipment is ready at MSC in early FY 1991.

The MSC Move's current priority is to update and refine plans for relocating collections to permanent MSC storage locations beginning in FY 1991. Based on the planned delivery schedules for reprocurd storage equipment, the Institution has proposed a new schedule for moving the collections of the Museum of Natural History and the Museum of American History to ensure that the Move is accomplished as timely and effectively as possible. Coordinating this complex project requires considerable advance planning.

Future MSC Move Requirements, FY 1991 - FY 1996 - Beginning in FY 1991, the Institution will begin to move collections into the Initial Move storage equipment that will be in place at the MSC by then. To effect this move, the Institution will hire administrative staff, museum specialists, technicians, and conservators. The Institution may contract some work, such as conservation and asbestos decontamination,

to outside individuals or firms. The administrative staff will procure the necessary supplies and equipment, coordinate the logistics, continue the planning, monitor the progress of the Move against the proposed schedule, and revise the schedule as necessary. The specialists and technicians will inspect, clean, invoice, stabilize, pack, transport, unpack, and place collections into permanent storage equipment at the MSC. The conservators will develop handling and packaging procedures and train the Move staff to use them.

The initial focus of the Move in FY 1991 will be on high priority collections and collections that will take a long time to move, including NMAH and NMNH's Departments of Anthropology, Vertebrate Zoology, and Entomology. Over time, the Institution will move collections from all divisions of the seven departments of NMNH (Anthropology, Botany, Entomology, Invertebrate Zoology, Mineral Sciences, Paleobiology, and Vertebrate Zoology) and the two departments of NMAH (History of Science and Technology, and Social and Cultural History). In addition, at the appropriate time, those collections already in temporary storage at the MSC will be relocated into their permanent storage equipment. The Institution also will relocate thousands of existing collection storage cabinets from the Museum of Natural History to the MSC for storing collections of the Departments of Mineral Sciences, Invertebrate Zoology, and Paleobiology.

The four years from FY 1991 through FY 1994 are the most critical years for the Initial Move. For example, the curatorial departments that are moving smaller numbers of collections will relocate their Initial Move specimens during this four-year period, while the move of much larger collections, such as Anthropology, will begin during this period and continue through at least FY 1996.

The increased Initial Move activity will require a substantial increase of funding in the next few years to achieve this plan. The Smithsonian projects that the preliminary estimate for the MSC Move from FY 1991 through FY 1996 will total at least \$5 million. In order to bring this project to a timely and successful conclusion, the Institution will reevaluate and refine these cost estimates as the project proceeds and more information becomes available. The MSC Move administration expects FY 1992 to be the year in which the greatest resources will be necessary, both in terms of funding levels and staffing.

To date, the Smithsonian has focused on the Initial Move into the high-density storage equipment. During this time, however, many of the collections of the curatorial departments have continued to grow. As a result, the distinction between those collections and activities designated for the Initial Move and those collections targeted for the future Growth Move has blurred. The Institution may need to conduct some Growth Move activity prior to completing the Initial Move activity. The Institution expects to require additional funding for Growth Move activities before FY 1995. In the near future, the Institution will explore the needs for the Growth Move activities in more detail.

Because the Institution is currently storing many of the collections in areas contaminated by asbestos, a special responsibility of the Move process is to clean these collections prior to the Move. After establishing acceptable asbestos decontamination techniques, the Smithsonian will proceed with specialized cleaning of the objects. The \$5 million cost estimate includes the cost of this cleaning including potential cleaning contracts.

Institutional Benefits to an Expeditious Completion of the Move - A timely and expeditious Move will benefit the Institution for three reasons. First, because the delay in installing the collections storage equipment has postponed the Move so long, the museums scheduled to move collections into the MSC are desperate for the proper storage for their collections and for the space relief that the relocation will provide. Second, the Smithsonian needs to reduce the time spent on the Move in order to reduce its total cost because the longer the Move lasts, the more it will cost as a result of inflation. Third, the Institution must delay other major projects if the Move does not occur quickly.

For the Natural History Building Master Implementation Plan to proceed, the Smithsonian must move these collections to the MSC in a timely fashion. Specifically, the contractor will not be able to make many of the required mechanical changes in the NMNH Building nor remove the asbestos insulation in the attics or treat it to ensure the safety of the collections and staff until these collections have been moved. Any delay in moving these collections scheduled for relocation to the MSC may delay this as well as other Natural History Building renovations.

As the Institution completes construction of its collections storage areas and installs its storage equipment, the Move will relocate millions of collections from the overcrowded storage areas on the Mall. This relocation will eventually free up some exhibit halls that museums are presently using for collections management and research purposes and are thus closed to the public. Relocating these collections from exhibit halls now occupied by collections management and research activities will permit the museums to return some of these exhibit galleries on the Mall to public use. Plans for gallery renovation are under way.

Collections in their current overcrowded, pest-infested, asbestos-contaminated conditions are not available for research or exhibit. For example, among the collections needing relocation are native-American ethnological objects currently stored in one of the Natural History Building's attics, which has exposed asbestos insulation. Moreover, many specimens represent species at risk of extinction through continued human impact on the planet. With the destruction of certain ecosystems, these specimens will become increasingly important for the study of biodiversity, pollution effects, and the physical destruction of the Earth's environment. Some collections, including tropical plants and mammal specimens, are in immediate danger of complete deterioration in the poor environmental conditions at the Garber Facility and the Smithsonian Institution Service Center.

Collections relocated to the MSC will be more accessible to researchers. With the improved environmental and storage conditions at the MSC as well as the cleaning and stabilizing received in preparation for the Move, the collections will also be better preserved for future generations of museum visitors, educators, and researchers. Support for the Move will allow the National Collections to survive and continue to serve the public.

Need for No-Year Funding for MSC Move - The MSC Move is very labor intensive. Any changes in the schedule of purchase and installation of the collections storage equipment, any delays as a result of hiring or losing staff, or any other unanticipated event can produce significant changes in the proposed Move schedule. The Smithsonian requests the provision of no-year funding for the MSC Move to allow shifts in the peak activity between fiscal years, without end-of-year restrictions resulting in the loss of appropriated funding. This provision will increase the overall efficiency of the Move, will ensure that sufficient Move funds remain

available if there are changes in the schedule, and will provide the most cost-effective way to accomplish this project.

Asbestos Decontamination Techniques - During FY 1989 and FY 1990, the Institution has evaluated the effectiveness of various cleaning techniques to remove asbestos from museum objects prior to moving them to the Museum Support Center. Cleaning is necessary because asbestos has contaminated these objects' present collections storage areas in the National Museum of Natural History, the National Museum of American History, and the Suitland Facility. An evaluation of various techniques will ensure that staff and/or contractors clean the collections effectively and that the collections pose no health threat to researchers or the public when the specimens are examined or displayed. The evaluation uses surface-testing and air-monitoring methods to indicate the level of contamination, both before and after cleaning. The Institution anticipates that it will complete this program in FY 1991.

III. Administration and Facility Management

The Office of the Director of the Museum Support Center coordinates activities of the various user and support units; oversees the automated data processing center used for registration and collections management activities, including the Move to the MSC; and arranges services to meet the research and informational requirements of MSC occupants. The Office also oversees the procedures established to control and account for the flow of collections into and out of the MSC and ensures the safety of the collections against pest infections and other hazards. Under the general supervision of the MSC's Office of the Director, the facility manager is responsible for providing shipping and receiving services, moving equipment and objects, overseeing safety and security operations, and cleaning and maintaining all aspects of the building. Because of the need to maintain very strict environmental standards for the care and storage of museum objects, cleanliness is a fundamental requirement for the successful operation of a collections management facility.

As custodian of the National Collections, the Smithsonian possesses more than 136 million art objects, natural history specimens, and artifacts. With the responsibility for preserving these collections for future generations of scholars and visitors, the Institution pays careful attention to the acquisition, conservation, and storage of these objects. With the additional responsibility for researching and understanding the immense cultural and scientific heritage inherent in these collections, the Institution provides laboratory and support services for the world's leading students and scholars to study them. A critical factor in ensuring the preservation and study of the National Collections is the development of facilities such as the Museum Support Center, which provide the optimum conditions for collections storage, research, and conservation. The Museum Support Center maintains the highest levels of building management and support activities, including computer services.

The MSC Office of the Director provides the infrastructure support services required for the care, conservation, storage, and move of the collections at the MSC. The MSC Office of Information Management provides computer services to staff throughout the Institution. The MSC VAX computer supports a variety of Institutional systems devoted to research, collections management, communications, and other administrative functions. Of particular significance is the MSC Move invoice system, which controls the Initial Move of more than 36 million objects and specimens into the MSC.

In 1988, the Institution looked back at the accomplishments of MSC's first five years and looked forward to its full potential, as a state-of-the-art facility for collections storage, conservation, and research. In the year since that anniversary, the MSC has seen the establishment of the new Laboratory for Molecular Systematics and the installation of the first storage cabinets on the newly constructed third floor of the Pod 1 storage area. The MSC is rapidly achieving this potential and the expanded level of computer support for automated information management will enable the Institution to better preserve the data and use of the National Collections for the benefit of both current and future generations.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - An allotment has supported the purchase of special laboratory equipment for the Conservation Analytical Laboratory.

PUBLIC SERVICE

ASSISTANT SECRETARY FOR PUBLIC SERVICE

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	25	1,391	44	2,751	-	504	-	1,036	-	38
FY 1990 -Estimate	26	1,452	46	2,926	-	93	-	600	-	-
-Base	26	1,487								
FY 1991 Estimate	26	1,640	46	2,959	-	85	-	1,000	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	26	0	26
11 Personnel Compensation.....	1,091	117	1,208
12 Personnel Benefits.....	177	21	198
21 Travel.....	22	0	22
22 Transportation of Things.....	2	0	2
23 Rent, Communications & Utilities.....	22	0	22
24 Printing & Reproduction.....	47	0	47
25 Other Services.....	67	15	82
26 Supplies & Materials.....	26	0	26
31 Equipment.....	33	0	33
Total	1,487	153	1,640

Analysis of Increase

Necessary Pay.....	138
Program Funds.....	15

ABSTRACT - The Office of the Assistant Secretary for Public Service encourages and supports the development of programs to advance the Institution's objectives in education, information, primarily through activities involving publication (print, audio, video and optical) folklore programs, the development of wider audiences and efforts to celebrate the achievement and contributions of women and major ethnic minority groups. It advises the Secretary on general policy issues and program planning for Public Service activities. This line-item also includes the Office of Wider Audience Development, the Office of Telecommunications, the Visitor Information

and Associates' Reception Center, and the Office of Public Affairs. The Office of Wider Audience Development provides advice and assistance to Smithsonian managers and the Secretary on management policy that can be changed or improved to increase minority involvement in programs, exhibitions and other audience related activities. The Office of Telecommunications produces programs for radio, film, and television relating to a variety of Smithsonian research and scholarly activities. The Visitor Information and Associates' Reception Center is a central support unit responsible for Institution-wide information and assistance programs for the public, Associate members, Smithsonian staff, and volunteers. The Office of Public Affairs acquaints the public with the programs and policies of the Institution by working with newspapers, magazines, television, and radio to gain media exposure for its exhibits, public events, and research.

For FY 1991, the Office of the Assistant Secretary for Public Service requests \$15,000 for Columbus Quincentenary activities in the Office of Public Affairs. The Institution requires \$138,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM:

I. The Office of the Assistant Secretary for Public Service - With base funding of 6 workyears and \$354,000, the Office of the Assistant Secretary for Public Service coordinates and supervises the Institution's general information and educational and public service programs and advises the Secretary on the development of policies and activities for these programs. The bureaus and offices reporting to the Assistant Secretary include the Office of Wider Audience Development, the Office of Telecommunications, the Visitor Information and Associates' Reception Center, the Office of Public Affairs, the Smithsonian Institution Press, Smithsonian magazine and Air and Space magazine, the Office of Folklife Programs, the Office of Interdisciplinary Studies, the Office of Elementary and Secondary Education, the National Science Resources Center, and the Office of Conference Services.

In FY 1990, as part of the Institution's Special Employment Initiative, Congress provided funding for the position of the director of the Office of Wider Audience Development and a media specialist. The Director will provide program direction for the Office of Wider Audience Development, including networking with culturally diverse institutions and organizations outside the Smithsonian to develop joint ventures; and developing periodic seminars for Smithsonian staff and specialists from cultural and educational organizations to explore in-depth pertinent themes of contemporary concern which bear on public interest. The media specialist will provide expertise as well as special sensitivity to cultural diversity considerations in all Smithsonian Public Service media activities.

II. Office of Telecommunications - With base funding of 5 workyears and \$241,000, the Office of Telecommunications (OTC) produces programs for radio, film, and television relating to a variety of Smithsonian research and scholarly activities. Distributed nationwide, these diverse programs are an important part of Smithsonian outreach, as they support and interpret the research, exhibition, and education goals of the Institution.

OTC produces two major program series. "Here at the Smithsonian," an award-winning series of short features for television, launched its eighth season with 17 new subscribing stations. It is telecast in seven of the ten largest cities across the country. "Radio Smithsonian," a weekly half-hour series, is carried by 90

stations nationally, reaching a potential weekly audience of four million people. Programs in both series focus on exhibitions, research, and performance activities throughout the Institution.

In FY 1989, OTC completed several other film and video projects. Two major video programs premiered in the fall of 1989 in the Smithsonian Information Center in the Great Hall of the Castle. One element, a 20-minute orientation program, runs continuously in two theaters. The other component, an interactive video disc program, will help visitors effectively plan their time at the Smithsonian. Computer-based touch screens provide information about each of the Institution's Washington museums and the National Zoological Park, along with details about visitor services, tours, demonstrations, and special attractions for children.

OTC completed a major one-hour film titled The Earth in Our Hands, for television and educational distribution. The film shows how working models of entire ecosystems can provide a better understanding of our planet and teach us how to better manage Earth's limited resources. Robert Redford narrates the film, based on the work of the Smithsonian's Marine Systems Laboratory.

OTC also produced several new video programs for museum exhibitions. In the Hall of American Maritime Enterprise at the National Museum of American History (NMAH), nine short films will depict the role of towboats, the lifeblood of commerce on the Mississippi River and other inland waterways. The Office produced three audio-visual pieces for the NMAH exhibition, "Men and Women: A History of Costume, Gender, and Power." They reflect the cultural roles men and women played in the Hollywood films of the 1920s, in television situation comedies of the 1950s, and in television advertising of the 1980s. Working with the NMAH Division of Musical History, the Office produced an interactive video to accompany an exhibition on the 90th anniversary of Duke Ellington's birth. The video features five of his film appearances spanning his career from 1929 to 1974.

For the Smithsonian Institution Traveling Exhibition Service (SITES), the Office produced a ten-minute film to accompany an exhibition on Frank Lloyd Wright's decorative arts. The film explores the complex issues of preserving Wright's architectural legacy--both his buildings and his furnishings. The National Museum of American Art (NMAA) requested an interactive video disc to enrich a showing of the Patricia and Phillip Frost Collection. The program focuses on five artists who pursued abstract art in the 1930s and 1940s, a time when figurative art was much more popular.

During FY 1989, OTC provided administrative oversight for the production of the new Smithsonian Video Collection, a series of programs for home video. The Collection completed six programs during the year: Dinosaurs, Insects, Gems and Minerals, First Ladies, The National Zoo, and The Flying Machines. Production began on a comprehensive tour of Smithsonian museums, called Supertour.

OTC worked on several projects designed to reach wider audiences. A Spanish-language television pilot consisting of four two-minute features debuted at the National Hispanic Media Conference to very positive reviews. The pilot was financed by a Smithsonian Educational Outreach grant, and fundraising is under way to support further production. A Latino media consultant prepared a report on long-range goals for Smithsonian media programs intended for Latino audiences. In addition, planning has begun for a radio series presenting a native-American perspective on the

Columbus Quincentenary, and funds are being sought for a new series of vignettes for African-American commercial radio.

OTC is working with the National Museum of Natural History to develop a series of short, up-to-date video pieces highlighting current natural history events. The pieces will run in a prominent space in the museum and may be distributed nationally in the future. The Office is also producing the video program to be seen at the end of the major exhibition "The Information Age," set to open at the National Museum of American History in May, 1990. This multi-screen program will emphasize that communications and computer technologies are tools whose use is under human control.

OTC plans to actively market its award-winning programs. The popular film Movie Palaces and the new production The Earth in Our Hands will both receive concentrated attention so can they reach the broadest possible audience.

III. Visitor Information and Associates' Reception Center - With base funding of 2 workyears and \$181,000, the Visitor Information and Associates' Reception Center (VIARC) is a central support unit responsible for Institution-wide information and assistance programs for the public, Associate members, Smithsonian staff, and volunteers. Operating seven days a week, many VIARC programs involve coordinating and directing volunteers who constitute a primary source of support for the Institution's public information programs and for project assistance behind the scenes.

Information services operates the new Smithsonian Information Center in the SI Building which includes two orientation theaters featuring a 20-minute orientation video; state-of-the-art interactive "touch screen" programs with information on the Smithsonian's museums and facilities in English and six foreign languages; rolling screen monitors that display information on daily Smithsonian activities and events; large scale models that detail the location of Smithsonian museums, major monuments, memorials and federal buildings in Washington's monumental core; electronic maps with adjacent interactive programs that locate and provide specific information about other popular visitor attractions in the nation's capital; and a series of backlit panels that interpret the range of collections and services found in each of the Institution's facilities. VIARC also is responsible for staffing 16 museum information desks in 11 buildings; staffing 2 Associates' reception desks; answering the Institution's public inquiry telephone lines; providing daily recorded information on Dial-A-Museum and Dial-A-Phenomenon; and responding to the Institution's public inquiry mail. VIARC also operates mobile information units out of doors during summer months and regularly conducts special tours of the Smithsonian Institution Building known as the Castle. VIARC also administers the Institution's exterior graphic information system. Other support services include recruiting and placing volunteers behind the scenes and operating an outreach program to promote previsit education and membership.

The Information Resources Division compiles, coordinates, and produces a variety of reference materials, information aids, and publications to support VIARC programs. This Division also oversees the prepublication review of visitor-oriented materials prepared by other Smithsonian offices.

Accelerated recruiting and training activity has increased the volunteer information specialists corps to more than 600. This level allows VIARC to staff the 74 daily information desk assignments and the Smithsonian Information Center. Outreach efforts continue to increase minority participation in this program. The Telephone Information Service handled more than 450,000 calls in FY 1989. The popular

Dial-A-Phenomenon recording on short-lived celestial events attracted thousands of interested callers. Specially recorded information telephone lines provided highlights of Smithsonian activities during Black History Month, Women's History Month, Asian-Pacific American Heritage Week, and Hispanic Heritage Month. The Public Inquiry Mail Service received and handled some 65,000 pieces of general information and research mail.

VIARC enhanced its exterior graphic information system with the installation of directional signs to the Anacostia Museum and general information directories on the Mall, a joint project of the National Park Service and the Smithsonian Institution.

Some 1,700 behind-the-scenes volunteers were active during the year, providing short- and long-term assistance on special projects including translation services in 38 languages.

IV. Office of Public Affairs - With base funding of 13 workyears and \$676,000, the Office of Public Affairs (OPA) acquaints the public with the programs and policies of the Institution by working with newspapers, magazines, television, and radio to gain media exposure for its exhibits, public events, and research. A major goal of the Office is to encourage culturally and economically diverse audiences to take part in the many resources of the Smithsonian. With funding provided in FY 1990, the Office of Public Affairs will hire a clerk-typist to provide clerical support for its expanded outreach efforts to the Asian and Native American communities.

In an effort to describe these resources to the millions of people who are unable to visit the Smithsonian museums, the Office prepares the Smithsonian News Service, which provides more than 1,000 daily and weekly newspapers with a free, monthly package of four feature-style articles on subjects in art, history, science, technology, and contemporary life. The News Service translates one of the four articles into Spanish. This translation accompanies the English versions to 100 Hispanic and bilingual newspapers in the United States (including Puerto Rico) and Canada and more than two dozen newspapers and publications in Latin America. Based on the results of a FY 1989 readership survey, in FY 1990 the News Service will change its format to be more useful to its subscribers. It will, however, continue to emphasize stories of particular interest to culturally diverse audiences.

In FY 1989, OPA substantially expanded its programs to reach a broader range of ethnic communities, including African Americans, Hispanics, and native Americans. It also began a program of media outreach to Asian Americans with attendance at the Asian American Journalistic Association meeting in San Francisco. The programs involve the coordinated preparation and distribution of news releases, brochures, public service announcements for radio and television, and direct media contact. The theme of this program is "The Smithsonian Is for Everybody." OPA produced media-related programs for the African-American community, including a television public service announcement, radio and newspaper advertisements, a monthly calendar of events for African-American newspapers, and bus and subway posters. For Hispanic audiences, OPA also prepared news releases and radio public service announcements, a calendar of events, a television public service announcement, and a brochure of Latino resources. The Office coordinated the participation of the Smithsonian at the annual Hispanic Media Conference in FY 1989, thereby acquainting 1,200 journalists with the resources of the Smithsonian. This effort included a major address by Smithsonian Secretary Robert McC. Adams and an exhibition.

The staff also produced two television public service announcements with a multi-heritage focus. The Office successfully launched a native-American internship. The initial intern, a Seneca Indian, prepared an exhibit for the National Indian Educators Conference, developed new mailing lists, and designed a newsletter for outreach to tribal communities. The succeeding intern, a Pueblo Indian, continues this work.

OPA focuses on the communication of research activities to the media through direct contact with journalists, resulting in many major articles appearing in such national publications as the New York Times and the Washington Post. In FY 1988, the circulation of Research Reports, a periodical devoted to reports on research in the arts, history, and science, reached a record of nearly 55,000 readers, including the scholarly community, foundations, universities, and Smithsonian contributing members. As a result of a readership survey, the Office is also revising the format and contents of this publication to make it more useful to its broad constituencies. In addition, the Office completed writing a new booklet that describes behind-the-scenes research at the Smithsonian. When published in FY 1990, the booklet will be useful to United States and foreign researchers, journalists, and visiting dignitaries.

OPA prepares a wide variety of other publications, including the Smithsonian monthly staff newspaper, The Torch, visitor brochures in English and six other languages, a guide for disabled visitors, a brochure on the Smithsonian for journalists, a monthly calendar of events, and flyers for various bureaus such as the Smithsonian Tropical Research Institute and the Anacostia Museum.

OPA conducts and coordinates extensive media campaigns on behalf of the Institution to publicize many events. In FY 1989, this included the observance of Hispanic Heritage Month, Black History Month, and Asian-Pacific American Heritage Week.

In addition, the Office designed and carried out media campaigns on behalf of the Anacostia Museum exhibition, "The Real McCoy: African-American Invention and Innovation, 1619-1930"; the International Gallery exhibition, "Caribbean Festival Arts"; the dedication of the new Mathias Laboratory at the Smithsonian Environmental Research Center; Smithsonian activities commemorating the bicentennial of the French Revolution; and the Festival of American Folklife. The Office also worked closely on advertising and publicity plans for the television series Smithsonian World, the Smithsonian Video Collection, and the Columbus Quincentenary.

OPA advises Smithsonian bureaus and offices on public information policies and programs. The Office monitors their public information materials, the Institution's many relations with corporate and other sponsors, and the advertising and promotional plans and materials of corporate sponsors. OPA informs management of public and media attitudes and needs.

The Office continues to receive acclaim for the work of its staff from the National Association of Government Communicators and the Society for Technical Communication.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the Office of the Assistant Secretary for Public Service requests \$15,000 for Columbus Quincentenary activities in the Office of Public Affairs. The Smithsonian's pan-Institutional Columbus Quincentenary Program will commemorate the voyages of Columbus to the Americas through exhibitions, symposia, publications, and television. The Program will focus on

cultural, historical, and scientific implications of the encounter between Europeans and indigenous peoples. Its issues will continue to be of global importance into the 21st century. As the Columbus Quincentenary will incorporate the contribution of Hispanic and native-American cultures, OPA will make a special effort to involve these audiences in the observances.

For FY 1991, the Office of Public Affairs requests an increase of \$15,000 to support the costs of promotion of all Quincentenary activities on radio, including the production of radio ads (\$3,000), and the purchase of radio air time (\$12,000). The Institution anticipates that it will request additional funding in FY 1992 and FY 1993 to promote Quincentenary programs.

The requested funds will help make sure the public is aware of the Smithsonian's Columbus Quincentenary activities.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds:

I. Office of the Assistant Secretary for Public Service - Annual allotments provide for the salary, benefits, and support costs of staff members assigned to the immediate Office of the Assistant Secretary for Public Service and consultants for electronic media activities.

Trust funds also support expenses associated with the Office of Wider Audience Development, including the Cultural Education Committee, which fosters the development of pan-Institutional outreach efforts designed to attract diverse cultural audiences. A Special Purpose fund provides for the Educational Outreach Fund, which fosters research on improved, expanded, and innovative methods of outreach activity. While the projected expenditures for FY 1990 and FY 1991 appear under this Office, the recipient organizations reflect the actual expenditures for FY 1989.

II. Office of Telecommunications - An annual operating allotment provides support for nine full-time staff members and costs associated with the production of educational and informational materials for television, film, and radio. Nominal subscription fees received for the "Here at the Smithsonian" television series and "Radio Smithsonian" help defray production and distribution costs. The sale of films and video programs provides additional funds.

III. Visitor Information and Associates' Reception Center - An annual operating allotment supports the Center's work as the Institution's public service bureau responsible for the information and assistance activities.

IV. Office of Public Affairs - Allotments provide support for public outreach activities such as wider audience advertising with the African-American, Hispanic, native-American, and Asian-American media, public service announcements for radio and television, "Welcome" brochures for museum visitors, monthly newspaper advertisements of general Smithsonian events, and the Smithsonian employee newsletter.

SMITHSONIAN INSTITUTION PRESS

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	27	1,214	40	18,799	-	56	-	7	-	-
FY 1990 -Estimate	29	1,269	40	19,490	-	-	-	-	-	-
-Base	29	1,294								
FY 1991 Estimate	29	1,391	41	17,651	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	29	0	29
11 Personnel Compensation.....	1,040	70	1,110
12 Personnel Benefits.....	153	12	165
21 Travel.....	3	0	3
23 Rent, Communications & Utilities.....	6	0	6
24 Printing & Reproduction.....	40	0	40
25 Other Services.....	28	15	43
26 Supplies & Materials.....	15	0	15
31 Equipment.....	9	0	9
Total	1,294	97	1,391

Analysis of Increase

Necessary Pay.....	82
Program Funds.....	15

ABSTRACT - A member of the Association of American University Presses since 1966, the Smithsonian Institution Press (SIP) is responsible for editing, designing, producing, and distributing books, sound recordings, and other printed materials prepared by Smithsonian scientists, historians, and curators, as well as scholars from educational institutions around the world. Such materials also include research monographs, technical and scientific series, exhibition catalogues for Smithsonian museums, educational pamphlets, and informational leaflets.

For FY 1991, the Smithsonian Institution Press requests an increase of \$15,000 to support the Columbus Quincentenary publishing program. The Institution requires \$82,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The Federal publication activity of the Press is a fundamental extension of the Smithsonian's basic research activities. The scientific, technological, and historical monographs that the Press publishes propagate research by Smithsonian curators and staff experts to libraries, museums, research institutions, and interested members of the public throughout the United States and abroad. Because of the Smithsonian's extensive use of computers to compile research results, the Press is able to assemble a wholly electronic typescript of each federally funded research monograph. The Press's desktop publishing equipment eliminates the cost of phototypesetting for all of these publications. The resulting cost containment has enabled sponsoring Smithsonian bureaus to restrain the escalation of their publication budgets. In addition to publishing research findings, the Press edits and designs exhibition catalogues, educational pamphlets, and informational leaflets that serve the millions of visitors to the Smithsonian in Washington, D.C., and its extensive programs conducted nationwide and worldwide.

Additionally, the Press acts as the official agent of the Smithsonian Institution in procuring services from the Government Printing Office (GPO) to create government forms, museum guides, and instructions, as well as in providing professional assistance to Smithsonian authors upon request. The Press also edits, designs, and produces Smithsonian Year, the Institution's annual report to its Board of Regents and the Congress.

Federally funded books published during FY 1989 include The Great Tzotzil Dictionary of Santo Domingo Zinacantan with Grammatical Analysis and Historical Commentary, by Robert M. Laughlin with John B. Haviland (Smithsonian Contributions to Anthropology, no. 31); Field and Laboratory Investigations from Victoria Land and the Thiel Mountains Region, Antarctica, 1982-1983 and 1983-1984, edited by Ursula B. Marvin and Glenn J. MacPherson (Smithsonian Contributions to the Earth Sciences, no. 28); Seagrasses, by Ronald C. Phillips and Ernani G. Menez (Smithsonian Contributions to the Marine Sciences, no. 34); The Autochthonous North American Musk Oxen Botherium, Symbos, and Gidleva (Mammalia: Artiodactyla: Bovidae), by Jerry McDonald and Clayton E. Ray (Smithsonian Contributions to Paleobiology, no. 66); and Technology in Miniature: American Textile Patent Models, 1819-1840, by Barbara Suit Janssen (Smithsonian Studies in History and Technology, no. 49).

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the Smithsonian Institution Press requests an increase of \$15,000 to support the Columbus Quincentenary publishing program. The planned Quincentenary observance of the Columbus landing of 1492 provides a matchless opportunity for the American people to reflect on the 500-year encounter between the Old and New Worlds. It is altogether appropriate that the Smithsonian Institution take a leading role in the coordination of a national program of research, reflection, and celebration. Within the constellation of exhibitions, new scholarship, and outreach activities planned by the Smithsonian, the publication of books for the general public and for the scholarly community is an especially important task.

At the center of the Press's Quincentenary publishing program is the Columbian Consequences project. This three-volume series addresses the social, demographic, ecological, and ideological repercussions of Columbus's arrival. Deliberately timed to precede the observances of 1992, the series explores the nature of early European-

native-American interaction across the Spanish Borderlands, the area of Spanish colonial settlement in the New World running from northern California to Florida. The project is being carried out for the Press under the direction of Dr. David Hurst Thomas, member of the National Academy of Sciences and curator at the American Museum of Natural History, New York.

Columbian Consequences is prepared and offered in response to the dual challenge facing the American scholarly community as it looks toward the celebrations of 1992. Already a host of events, presentations, and exhibitions for the interested public, as well as symposia and specialized publications, reflect an upsurge in scholarly activity around issues raised by the Quincentenary. These generalized and specialist endeavors tend to proceed along parallel and nonintersecting tracks. Columbian Consequences represents a fundamental synthesis of these two approaches by exploring the range and diversity of contemporary thought about the encounter and by providing an interested public with an accurate and factual assessment of what did and what did not happen during that crucial period in America's, and the world's, history. Indeed, a principal reason for completing the series by 1991 is to provide this important and authoritative resource to all the community and educational groups preparing programs that explore the many aspects of the Quincentenary. Columbian Consequences, when completed, will represent at once the broadest and most academically up-to-date account of the Spanish colonial period available to the public.

This vast project draws together the research of more than 100 scholars in the fields of anthropology, archaeology, history, and geography and includes contributions from native-American scholars. The Press published the first volume by redirecting other resources, but requires additional funds as a one-time need for FY 1991 for honoraria for commissioned articles, preparation of maps, and partial support of Dr. Thomas's three years of research and editorial development of this complex project.

The Columbian observance of 1992 should be an occasion for the self-education of the American people at least as deep and far reaching as the American Revolution Bicentennial of 1976. The Columbian Consequences project will help to stimulate widespread public discussion on the social, demographic, ecological and ideological repercussions of this important historical period.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - The sale of Trust-funded books and recordings, royalties, and special publishing services produce these resources. The funds thus produced support the necessary services required to develop, market, warehouse, and distribute records and scholarly and general interest books published in connection with the Institution's research collections, exhibitions, and other programs.

University Press Division - Both the public and the scholarly media noted publication of several University Press titles this year, particularly Women of Deh Koh: Lives in an Iranian Village, by Erika Friedl; The Recovery of Meaning: Historical Archaeology in the Eastern United States, by Mark P. Leone and Parker B. Potter; Men and Women: Dressing the Part, by Claudia Brush Kidwell and Valerie Steele; Amelia Earhart, by Doris Rich; Albert Pinkham Ryder, by Elizabeth Broun; and Eyewitness to War: Prints and Daguerreotypes of the Mexican War, 1846-1848, edited by Martha Sandweiss, Rick Stewart, and Ben Huseman. At the same time, the Press continued to strengthen and deepen the subject diversity of its list by the quality and number (approximately 85) of books published in the fields of art, science,

anthropology, archaeology, aviation, and history. The lead title in the Press' new publishing field of music is Thomas L. Riis's Just Before Jazz: Black Musical Theater in New York, 1890 to 1915, illustrated with photographs, sheet-music facsimiles, musical examples, and newspaper reviews.

The Press has announced a new series, the Smithsonian History of Aviation, and this year has published the lead title: Strike from the Sky: The History of Battlefield Air Attack, 1911-1945, by Richard P. Hallion. Other aviation titles published include High Honor: Recollections by Men and Women of World War II Aviation, edited by Stuart Leuthner and Oliver Jensen; Cierva Autogiros: The Development of Rotary-Wing Flight, by Peter W. Brooks; and (new in paperback) A Dream of Wings, by Tom D. Crouch.

The Smithsonian Series in Archaeological Inquiry was enhanced this year by publication of the first of two volumes reporting evidence of human habitation in the ancient site of Monte Verde: A Late Pleistocene Settlement in Chile, by Tom D. Dillehay. Off the press at almost the same time was the first volume of David Hurst Thomas's three-volume Quincentenary series on the Spanish Borderlands (the northern rim of New Spain): Columbian Consequences: The Californias, Texas, and the Southwestern Heartland. Volumes published in the Smithsonian Series in Ethnographic Inquiry include: Pilgrims of Paradox: Calvinism and Experience among the Primitive Baptists of the Blue Ridge, by James L. Peacock and Ruel W. Tyson, Jr.; Ritual Passage, Sacred Journey: The Form, Process, and Organization of Religious Movement, by Richard P. Werbner; Cloth and Human Experience, edited by Annette Weiner and Jane Schneider; and Symbolic Immortality by Sergei Kan.

Publishing in the natural sciences was notable for the Press in this fiscal year, with these titles in the lead: Sharks in Question: The Smithsonian Answer Book, by Victor G. Springer and Joy P. Gold; Turtles of the World, by Carl H. Ernst and Roger W. Barbour; Marine Plants of the Caribbean: A Field Guide from Florida to Brazil, by Diane Littler, Mark Littler, et al.; and The Restless Sun, by Donat G. Wentzel. The Press also announced a new series, the Smithsonian Series in Comparative Evolutionary Biology.

Smithsonian Collection of Recordings - The Recordings program publishes both popular recordings suitable for direct mail marketing to Smithsonian Associates and recordings of scholarly interest. During FY 1989, the program released Beethoven: Piano Trios, Op. 70 with the Castle Trio performing on original instruments. Another release was The Twelve Trio Sonatas, Op. 3 of Corelli, performed by the Smithsonian Chamber Players. Two more additions to the classical repertoire were recently released: Beethoven: Op. 18 String Quartets, and Hayden: Op. 77 String Quartets, both performed by the Smithsonian String Quartet. With its continuing emphasis on American contributions to our musical heritage, the Recordings program produced Jazz Piano, programmed by Martin Williams; American Musical Theater program annotated by Dwight Bowers; and two rereleases in the compact disc format: Revised Classic Jazz, programmed by Martin Williams; and American Popular Song, programmed by Dwight Bowers, James Morris, and J. R. Taylor. This year, for the fifth year in a row, a Smithsonian Collection release, The Classic Hoagy Carmichael, produced with the Indiana Historical Society, received nominations for National Academy of Recording Arts and Sciences (NARAS) "Grammy" awards in the categories of Best Historical Album and Best Album Notes.

Smithsonian Books - The "popular book" division of the Press, Smithsonian Books publishes books for a general audience on subjects that relate to Smithsonian

collections and research interests. These books, marketed primarily by direct mail to Smithsonian Associates and other lists, are also available to the general public through licensing arrangements with several trade publishers, including the sales force of the University Press Division. Some of the titles currently available are: Lords of the Air: The Smithsonian Book of Birds; Images of America: A Panorama of History in Photographs; In the Age of Mankind: A Smithsonian Book of Human Evolution; Exploring the West; The Smithsonian Book of Flight; The Smithsonian Book of North American Indians; and Treasures of the Smithsonian. In addition, Smithsonian Books has successfully marketed a 60-minute video, The Magnificent Whales. The goal of the program is to continue publishing well-written, carefully researched, commercially successful, and critically well-acclaimed books and related videos.

For FY 1990, Smithsonian Books plans to publish an anthology of Smithsonian magazine articles to commemorate the 20th anniversary of the magazine, and a sequel to the Smithsonian Book of North American Indians titled After Columbus: The Indians of North America since the Coming of The Europeans, by Herman Viola.

OFFICE OF FOLKLIFE PROGRAMS

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	10	809	15	819	-	561	-	390	-	831
FY 1990 -Estimate	9	1,027	15	795	-	100	-	618	-	1,800
-Base	9	1,034								
FY 1991 Estimate	10	898	15	817	-	100	-	700	-	1,700

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	9	1	10
11 Personnel Compensation.....	371	33	404
12 Personnel Benefits.....	52	10	62
21 Travel.....	28	10	38
22 Transportation of Things.....	5	0	5
23 Rent, Communications & Utilities.....	36	0	36
24 Printing & Reproduction.....	52	0	52
25 Other Services.....	452	-189	263
26 Supplies & Materials.....	20	0	20
31 Equipment.....	18	0	18
Total	1,034	(136)	898

Analysis of Increase

Necessary Pay.....	11
Program Funds.....	-147

ABSTRACT - The Office of Folklife Programs (OFP) researches, conserves, and presents living folklife traditions found in the United States and abroad. Major activities include the annual Festival of American Folklife, Smithsonian Folkways Records, the Smithsonian Folklife Studies series of publications and documentary films/recordings, research projects, museum exhibits, symposia for the Columbus Quincentenary, educational projects, and the Folklife and Folkways Archives. (For FY 1990 and prior years, budget information for the Office of Folklife Programs

appeared in the Special Programs section as part of the American Studies and Folklife Programs line-item.)

For FY 1991, the Office of Folklife Programs requests 1 workyear and \$50,000 for Columbus Quincentenary programs. The Institution requires \$11,000 for Necessary Pay for existing staff funded in this line-item. The FY 1991 estimate reflects a reduction of \$197,000 associated with nonrecurring costs for the French Bicentennial in FY 1990.

PROGRAM - The Office of Folklife Programs researches American and worldwide folklife traditions and publishes and presents research to scholarly and public audiences. OFP conserves folklife traditions through documentary and archival collections of music, narrative, performance, and material culture. The annual Festival of American Folklife, held on the Mall, gives national recognition to thousands of traditional musicians, craftspeople, and other artists. The Festival encourages participants to maintain and transmit their cultures to future generations. The Festival and other OFP activities also allow the public to learn about diverse American cultures and the cultures of other nations. OFP cooperates with other Federal and State agencies to advance the Nation's interest in folklife.

Research and Publications - OFP currently engages in research on folklife traditions in Hawai'i, the Virgin Islands, Washington, D.C., and Francophone America; the traditions of African-Americans in Philadelphia; immigrant cultures from Latin America and Southeast Asia; Navajo music; American-Indian cultural resource issues; and the culture of family farming in the United States. International projects include the study of African epics; Indian folk arts; Soviet and Soviet-American music and folklore; Indonesian culture; Senegalese folklore; and Caribbean and Brazilian music and culture.

OFP disseminates research through scholarly journals and presentations, Smithsonian Folkways Records, Quincentenary symposia, a program book published for the Festival of American Folklife, and the Smithsonian Folklife Studies series. Series releases this year include the documentary film D.C. Firefighters and a monograph on Tule technology. Other scholarly projects include articles on cultural representation and conservation, publications on native-American culture, African epic traditions, Caribbean cultural history and folklife, and a radio series on diverse American and world folk traditions. Smithsonian Folkways newly released albums, with scholarly notes, include Musics of Hawai'i, Caribbean Social Music, Cajun Social Music, Puerto Rican Music in Hawai'i, Hawaiian Drum Chants, Big Bill Broonzy Sings Folk Songs, various children's albums by Ella Jenkins, and American folk music albums of Pete Seeger, Leadbelly, Woody Guthrie, Elizabeth Cotten, and Phil Ochs.

Exhibitions and Public Programs - The Smithsonian's Festival of American Folklife, held annually on the Mall since 1967, has stimulated broad interest in traditional culture and provides a model for the research-based presentation of culture. The 1989 Folklife Festival featured programs on Hawai'i, the cultural conservation of native-American cultures, and Creolization in Caribbean culture. The French Bicentennial afforded a timely and unique opportunity to present Festival programs on French culture in France and North America. In 1990, the Festival will feature programs on the U.S. Virgin Islands, Senegal, and the music of struggle. The Music of Struggle program at the 1990 Festival of American Folklife will examine through performance and workshops the ways that folk communities in the United States and worldwide have utilized traditional music as a unifier and source of strength when

facing contemporary challenges. The Festival will draw an estimated 1.5 million visitors.

The Festival has effects beyond the Mall: Hawai'i, featured in the 1989 Festival, plans to restage the exhibition in that State and has expanded its folk arts program. Previous Festivals have generated research materials for scholars of folklore, ethnomusicology, and social anthropology in Louisiana, Tennessee, Michigan, and Massachusetts. As a national and international model for the research-based living presentation of culture, the Festival hosted observers from several other nations, a variety of State arts agencies, and U.S. universities and other festivals and institutes.

During FY 1990, OFP scholars will participate in a symposium "Seeds of Industrialization," the third in a series of Quincentenary symposia dealing with New World cropping systems and related cultural expressions. Through the Smithsonian Institution Traveling Exhibition Service, OFP is currently touring "The Grand Generation," an exhibition on the folklife of the elderly, and "Stand by Me: African American Expressive Culture in Philadelphia," a photo-text exhibit. Future plans include museum and traveling exhibitions on Southeast Asian immigrants, and American-Indian cultural continuity.

For FY 1991, OFP plans Festival programs on the cultural importance of the family farm in the U.S. heartland, Indonesian folklife, and native American cultural use of land. OFP plans future programs with the States of New Mexico, Washington, and Missouri. Other plans include programs on the folklife traditions resulting from Columbus's voyages and the subsequent juxtaposition of cultures. OFP is discussing country programs with Algeria, China, the Soviet Union, the Arab Gulf States, Thailand, Australia, Pakistan, Spain, and many Latin American nations.

Archives and Education - The Folklife and Folkways Archives contain audiotapes, records, videotapes, photographic images and film, paper files, and books documenting folklife traditions from all parts of the United States and some 47 countries. Highlights of the collection include materials on occupational folklife, family folklore, immigration stories, American musical traditions, and the performance traditions of African-Americans, American Indians, and other ethnic groups.

The Archives is a valuable resource for ongoing research. In FY 1990, visiting fellows will use the Archives to research American folk musics, Caribbean culture, Southeast Asian immigrant folktales, Pakistani folk beliefs, and other topics. Major archival activities include accessioning Folkways materials and conserving and cataloguing folklife materials.

Educational projects include developing OFP materials for schools around the country and hosting the Summer Folklore Institute for community-based "amateur" researchers, particularly from minority groups. This unique program enables 12 community scholars annually to join with museum and academic experts to develop a broad-based strategy for studying and representing diverse, grass-roots American traditions.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the Office of Folklife Programs requests 1 workyear and \$50,000 for Columbus Quincentenary programs. The Columbus Quincentenary is a once-in-a-lifetime opportunity for all the peoples of the Americas to see the important contributions made by their ancestors to contemporary American culture.

As part of the Smithsonian's Quincentenary programs, the Office of Folklife Programs will present "living exhibitions" on the National Mall; a series of three symposia dealing with cultural expressions from agricultural, commercial, and industrial societies in the Americas; a scholarly program of folklore, ethnographic and ethnomusical research; and associated publications. The first "living exhibition" entitled "The Caribbean: Cultural Encounters in the New World" was presented at the annual 1989 Festival of American Folklife in June-July. The Festival's "living exhibitions," as opposed to the exhibitions of conventional museums, use people who play music, make crafts, and tell stories from their own cultures, rather than using a static exhibition of objects to communicate those traditions.

The requested increase will provide an expanded base of 2 workyear and \$160,000 to allow OFF to continue to research and develop the "living exhibitions" to be presented on the Mall in FY 1991 and FY 1992. This presentation in FY 1991 will examine the expressive culture, including occupational folklore, music, rituals, and crafts associated with the agricultural and subsistence activities of native peoples throughout the Western hemisphere. Research will concentrate on traditional folklife associated with pre-Columbian agricultural systems that have survived, adapted, or changed over the past 500 years. OFF will conduct field research in selected but varied New World settings and employ scholars and experts from within the studied culture groups. Research will document:

- practitioners of indigenous ethnobotany and medicine;
- the occupational knowledge and skills associated with native hunting, gathering, and garden cultivating;
- craft, musical, ritual, and performance traditions associated with the production, distribution, and celebration of native foodstuffs and materials such as corn, potatoes, wild rice, fish, animal horns, and skins.

With funding provided in FY 1990, the Office of Folklife Programs will hire a clerk-typist to provide clerical support for these Quincentenary activities. For FY 1991, the increased funding will permit OFF to hire a program coordinator (1 workyear and \$32,000) to take over program development from existing staff as the demands for this responsibility expand to a full-time requirement. In addition, the FY 1991 request will provide increased funding to support the expanded requirements for contract researchers, travel, and documentation expenses (\$18,000). OFF will document the living exhibitions, the symposia, and the prerequisite field research on which the exhibitions and symposia are based, using audio, video, and written media.

With the Columbus Quincentenary, Americans from several nations will enjoy a common celebration of their diverse cultures. Participants will see not only the contribution of their own heritage to modern American culture, but also the impact of many nations' traditions, crafts, and skills on the American way of life.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Allotments and concessions at the Festival of American Folklife provide these funds, which support salaries and related program costs. The Smithsonian's Educational Outreach, Special Exhibition, and Research Opportunities Funds support such projects as the Summer Folklore

Institute, the planning of an exhibition on the experience of Southeast Asian immigrants, and the conduct of scholarly research.

Restricted Funds - Individual gifts and grants from private foundations and corporations provide these funds, which OFP uses for specific programs or components. Funds in FY 1989 from the Hawai'i Visitors Bureau helped support the Hawai'i program. The American Committee on the French Revolution provided partial support for the French culture program at the Festival of American Folklife. Grants from the Music Performance Trust Funds supported the American-Indian and Caribbean programs. Additional gifts aided the publication of Folkways Records and supported other projects.

Government Grants and Contracts - Various State and local governments provide these funds to support performances and programs at the annual Festival of American Folklife. In FY 1989, OFP received these funds to support the Hawai'i program.

ACADEMIC AND EDUCATIONAL PROGRAMS

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	13	836	7	709	-	73	-	133	-	-
FY 1990 -Estimate	17	841	9	795	-	2	-	155	-	-
-Base	17	856								
FY 1991 Estimate	17	846	9	817	-	2	-	6	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	17	0	17
11 Personnel Compensation.....	571	11	582
12 Personnel Benefits.....	112	2	114
21 Travel.....	10	0	10
22 Transportation of Things.....	1	0	1
23 Rent, Communications & Utilities.....	7	0	7
24 Printing & Reproduction.....	42	0	42
25 Other Services.....	83	-23	60
26 Supplies & Materials.....	20	0	20
31 Equipment.....	10	0	10
Total	856	(10)	846

Analysis of Increase

Necessary Pay.....	13
Program Funds.....	-23

ABSTRACT - Research and education are among the principal objectives of the Smithsonian. To attain these goals, the Institution promotes scholarly and academic ties with other learned institutions and offers resources to the general public as well as the academic community. Scholarly and academic ties develop and flourish through programs in higher education, symposia and seminars, and learning opportunities at the elementary and secondary levels. This line-item includes the Office of Interdisciplinary Studies (OIS), the Office of Elementary and Secondary Education (OESE), and the National Science Resources Center (NSRC). (For FY 1990 and

prior years, the Academic and Educational Programs budget line-item appeared in the Special Programs section. The Office of Fellowships and Grants, formerly presented in this line-item, is now a component of the Assistant Secretary for Research budget line-item.)

For FY 1991, the Office of Elementary and Secondary Education requests to retain \$15,000 of the \$38,000 provided to OESE in FY 1989 for its Columbus Quincentenary program to support a program for school teachers and administrators in conjunction with the Columbus Quincentenary. The Institution requires \$13,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM:

I. Office of Interdisciplinary Studies - With base funding of 4 workyears and \$172,000, the Office of Interdisciplinary Studies explores gaps in scholarship. The Office presents findings of new research in the physical, natural, and human sciences and the humanities. Through symposia, colloquia, and seminars, the Office raises questions about issues and trends in modern civilization and publishes books and other educational materials based on these encounters. Thus, it serves both internal and external audiences. It is a vital public service link between the Smithsonian and partners in the world of learning.

In October 1989, OIS presented its tenth international symposium entitled, "Les Droits de L'Homme and Scientific Progress." Sponsored by both the Smithsonian and the National Academy of Sciences, the symposium was the scholarly centerpiece of the United States' commemoration of the 200th anniversary of the French Revolution, the United States Bill of Rights, and the Declaration of the Rights of Man and the Citizen. Leading members of the science and technology communities of France and the United States, took part, first at Thomas Jefferson's Monticello and the University of Virginia in Charlottesville, Virginia, and then in Washington, D.C. As with all its international symposia, the Office will publish a book and other educational materials based on information derived from the symposium.

As an outgrowth of a five-day international symposium, in 1987, entitled "Constitutional Roots, Rights, and Responsibilities," OIS completed a video entitled Democracy and Rights: One Citizen's Challenge. The production, a joint project with the Close-Up Foundation, explored the story of one citizen's pursuit of equal rights in the context of desegregation. Participants in the video production included Justice Sandra Day O'Connor, who served as narrator, and officials of the Close-Up Foundation. On May 2, 1989, OIS hosted the premiere screening of the video and received favorable responses from such viewers as Justice Lewis Powell, Justice O'Connor, and Smithsonian Regent Jeannine Clark. As a sequel to the video, OIS plans to produce another film documentary to emphasize duties and responsibilities that make the Constitutional system work.

For FY 1990, OIS will inaugurate a series of seminars, "Research on Contemporary Cultures and Civilizations," modeled in part on the World War II series at Columbia University organized by Ruth Benedict and Margaret Mead. Comparative studies of three cultures (including the United States) in each seminar will enhance Americans' understanding of other cultures and shed light on the multi-ethnic aspects of American culture. The seminars will focus on key myths and symbols around which plural societies and minorities organize their identities. Participants will examine childhood socialization to find out how individuals learn to become adults in different kinds of cultures. Insight and data from the seminars--particularly on

problems the United States has in communicating with other cultures--will eventually reach wider audiences through publications.

Consultation is under way in native-American research and educational institutions and other national and international arenas for ideas to incorporate in the 1992 symposium, "Exploring the Unknown," to be held as part of the Smithsonian's commemoration of the Columbus Quincentenary.

In FY 1990, as part of the Institution's Special Employment Initiative, Congress provided funding for a program specialist position. The new position enables the Office of Interdisciplinary Studies to develop more major symposia, colloquia and seminars directed at minority audiences and to increase public awareness and understanding of other ethnic American cultures.

II. Office of Elementary and Secondary Education - With base funding of 8 workyears and \$409,000, the Office of Elementary and Secondary Education is the Smithsonian's central education office. It designs, develops, and implements Institution-wide programming in education. OESE disseminates the products of this programming locally, nationally, and internationally. It also develops Institution-wide policies and goals for education. National programs that exceed the scope of the individual museums and their respective education offices receive special attention.

OESE offers many programs to encourage cooperation and exchange of information between the Smithsonian and schools in the metropolitan Washington area. Let's Go, a newsletter published five times a year, informs more than 11,000 Washington area educators about the variety of learning opportunities available at the Smithsonian. In addition, a multi-disciplinary workshop and seminar program for teachers includes one-week courses on topics such as teaching life sciences through direct observation, using primary source materials to interpret history, and teaching American cultural history through art. Accredited by all metropolitan area school systems, these courses have served more than 350 teachers and administrators in FY 1989.

To share these same teaching concepts with a national audience, OESE distributes free to schools across the country the quarterly newsletter, ART TO ZOO. Since 1976, ART TO ZOO has been a highly regarded publication and a staple of OESE programming. It represents a cost-effective way of interpreting Smithsonian resources for a large and culturally diverse constituency of teachers, students, and museum educators. Currently, ART TO ZOO reaches more than 70,000 teachers (and two million students) in more than 25,000 schools; in addition, it goes to more than 100 museums that use it in program planning. This publication costs the Institution less than 27 cents per issue, a very low per teacher price. OESE also circulates, free of charge, slide-loan packages and curriculum kits, which reach an estimated 5,000 students yearly.

Under the terms of the Rehabilitation Act of 1973, the Smithsonian is legally responsible for making its programs accessible to people with disabilities. To help the Institution fulfill this responsibility, OESE has created a program that now serves as the central Smithsonian resource on museum access. The program offers staff and docent-training sessions and programs for and about disabled individuals. It also provides sign language instruction for Smithsonian employees and sign language interpreters for a wide range of Smithsonian programs. Since 1983, the demand for interpreter services has increased by more than 50 percent. Throughout FY 1989, the Office continued to make Smithsonian programs accessible to disabled visitors. This effort included, in addition to the above activities, dissemination of a manual and videotape package designed to help museums, zoos, and historic sites across the

country serve disabled people. OESE distributed the package to more than 300 organizations.

To commemorate the Columbus Quincentenary, OESE is developing a series of multi-cultural education packets written in English, Spanish, and Portuguese. The packets will introduce preschool age children to the cultural and animal life of the Americas. In addition, OESE will develop curriculum materials around the themes of a special Quincentenary television series. For FY 1991, OESE plans to undertake a program to provide elementary and secondary educators with knowledge and resources to help them improve their teaching about Latin America.

III. National Science Resources Center - With base funding of 5 workyears and \$260,000, the National Science Resources Center is a joint undertaking of the Smithsonian Institution and the National Academy of Sciences to improve the quality of science and mathematics teaching in the Nation's schools. The NSRC identifies, develops, and disseminates science and mathematics teaching materials that are imaginative, classroom tested, and scientifically up to date. The Center also organizes leadership development institutes for science teachers and other school system personnel. These institutes encourage sharing of successful resource materials and help build a talent pool to staff local program improvement efforts. NSRC staff works with teachers, state and local school systems, research scientists, educational and scientific organizations, science museums, private foundations, and corporations to develop these programs.

In 1987, the Smithsonian and the National Academy of Sciences established an advisory board for the National Science Resources Center that includes representatives from several major corporations, eminent scientists, and educational leaders throughout the country. The board counsels the NSRC executive director on broad policy issues and helps set priorities for the Center's programmatic activities.

Because there is a special need to increase the scientific and technological literacy of young children, NSRC has undertaken several projects to improve the teaching of science in the Nation's elementary schools. NSRC's Elementary Science Resource Collection and Computer Information data base is used by school systems and science museums that are initiating projects to improve the teaching of science in elementary schools. The data base includes bibliographic information and brief annotations about the materials in the Elementary Science Resource Collection. The data base is available to school systems across the Nation through a computer telecommunications network.

NSRC has also published an elementary science resource guide entitled Science for Children: Resources for Teachers. In addition to information about the materials in the Elementary Science Resource Collection, this guide includes a directory of science museums and other organizations that provide hands-on science kits and assistance to elementary school teachers. NSRC has distributed copies of this guide to the Nation's 16,000 superintendents of schools and members of the National Science Supervisors Association. Teachers, principals, parents, and the general public can obtain copies of Science for Children from the National Academy Press.

"Science and Technology for Children" (STC) is a four-year elementary science curriculum development project. The project is developing curriculum units for grades 1-6 in the areas of physical science, life science, earth science, and technology. STC units use simple, inexpensive materials to teach science and link science to the broader elementary school curriculum by emphasizing reading, writing, art, and

mathematics. Teachers across the country will field-test STC units to refine and validate them.

NSRC is developing a network of teachers, scientists, science educators, and school administrators who are working to improve the teaching of elementary school science. NSRC also sponsors leadership development institutes to prepare selected teachers, science supervisors, and principals to organize hands-on elementary science programs in their school districts. These institutes help school systems arrange effective in-service education programs, establish science materials support systems, and develop community support for their hands-on science programs.

EXPLANATION OF PROGRAM CHANGE - With funding of \$38,000 provided in FY 1989 and FY 1990, OESE is developing educational materials for preschool teachers and students in commemoration of the Columbus Quincentenary. For FY 1991, OESE requests to retain a portion of this funding (\$15,000) to undertake a second project for the Quincentenary.

In 1985, the Smithsonian initiated planning for a pan-Institutional program to commemorate the 500th anniversary of the landing of Christopher Columbus in the Americas. The Institution's commitment to move beyond traditional Euro-centric interpretations to highlight the experience and contributions of all peoples affected by the Columbus landfall in the Americas has invigorated its plans to commemorate the Columbus Quincentenary.

As part of this multi-cultural perspective, the Office of Elementary and Secondary Education will concentrate its efforts in FY 1991 to help elementary and secondary educators improve their skills for teaching their students about Latin America. The program's three components are: a two-and-one-half-day symposium; a one-hour video; and a special issue of the periodical ART TO ZOO. In addition, the Office will publish a report on the symposium.

The symposium's focus will be the effects of cultural transplantation--from Latin America to the United States--on the folk art traditions of storytelling, textile arts, and music. OESE will develop this theme through scholarly presentations, performances by Latin-American artists, and workshop sessions demonstrating specific ways that teachers can apply in their classrooms the knowledge and insights they have gained from the performances and presentations.

The one-hour video will document the performances, while a special issue of ART TO ZOO will show teachers how to use multi-cultural resources in their own communities for teaching about Latin America. The video, the conference report, and the special issue of ART TO ZOO will be available as a package to schools across the country.

OESE will use the retained funding to cover the costs of the performance (\$2,500), the symposium (\$8,500) and to publish the symposium report (\$4,000). OESE will seek outside funding for the video.

With the Columbus Quincentenary observance fast approaching, students in elementary and secondary schools around the country will soon take a renewed interest in learning about the experience and contributions of all peoples affected by the Columbus landfall in the Americas and about the effects of cultural transplantation. As a result of this program, their teachers will be better prepared to answer their questions and to use up-to-date multi-cultural resources to give the students a better understanding of the historical significance of the Quincentenary.

NONAPPROPRIATED SOURCES OF FUNDING:

I. Office of Interdisciplinary Studies:

Unrestricted General and Special Purpose Funds - An annual allotment from unrestricted funds provides funding for salaries and partial office support. In addition, an annual allotment supports certain program development costs including honoraria, publications, and travel costs for speakers appearing in symposia and colloquia.

Restricted Funds - Funds provided are in the form of restricted endowments that specify the use of donations or bequests and of gifts and foundation grants by individuals, organizations, or corporations for specific purposes. Examples of these funds are the Sergei N. Grimm endowment, which finances research related to scientific urban planning, and the Barrick W. Groom endowment, which perpetuates both inter-bureau and inter-disciplinary programs. During FY 1989, OIS received grants from the Florence Gould Foundation and the John D. and Catherine T. MacArthur Foundation for the international symposium entitled, "Les Droits de L'Homme And Scientific Progress."

II. Office of Elementary and Secondary Education:

Unrestricted General and Special Purpose Funds - As part of the Institution's affirmative action effort, a Career Awareness Program (CAP) for the District of Columbia Public Schools introduces minority young people to career opportunities at the Smithsonian. OESE plans and runs CAP with help from the various Smithsonian museums, whose staff members work directly with the students, providing first an overview and then more profound exposure to a wide variety of Smithsonian careers. Through the District's Summer Youth Employment Program, 50 CAP graduates from this and past years worked at the Smithsonian during the summer of 1989. In a related effort and in collaboration with Washington, D.C.'s School Without Walls, OESE initiated a program in which high school students publish their own newsletter about the Smithsonian for dissemination to other schools in the area.

In FY 1989, the Office continued to sponsor regional workshops in communities across the United States to promote the use of museums as educational resources. These one-day events in Wilmington, North Carolina; Amarillo, Texas; and Tallahassee, Florida reached an estimated 1,000 teachers and school administrators. In addition, OESE collaborated with WETA to develop a series of teacher's guides to the 1989-1990 season of "Smithsonian World."

The High School Intern Program, now in its 14th year, gave 40 graduating seniors an opportunity to participate in a learning-service program at the Smithsonian, working behind the scenes with curators and other museum professionals. Young people from all 50 states and the District of Columbia are eligible to apply for admission to either of two five-week sessions.

In July 1989, the Office convened the third annual meeting of the Smithsonian Advisory Council on Education, bringing a panel of seven outside experts to the Institution to advise about developing programs for teenage audiences. In a related effort, the Office convened monthly meetings of education staff from throughout the Institution to discuss issues of common concern. For Smithsonian educators, the Office offered a seminar series on program evaluation in collaboration with the special assistant to the Secretary on institutional studies.

III. National Science Resources Center:

Unrestricted General and Special Purpose Funds - An allotment from unrestricted funds provides partial funding for the core operations of the National Science Resources Center. These resources provide support for salaries and core support necessary for the development, with the assistance of the National Academy of Sciences, of program initiatives to attract further support from the private sector.

Restricted Funds - Funds provided are in the form of gifts and grants from individuals, organizations, or corporations. A grant from the John D. and Catherine T. MacArthur Foundation supports "Science and Technology for Children," a four-year elementary science curriculum development project.

INTERNATIONAL ACTIVITIES

INTERNATIONAL ACTIVITIES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	11	740	11	546	-	557	-	180	-	71
FY 1990 -Estimate	12	916	10	692	-	150	-	-	-	-
-Base	12	929								
FY 1991 Estimate	13	990	10	648	-	150	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	12	1	13
11 Personnel Compensation.....	445	47	492
12 Personnel Benefits.....	64	12	76
21 Travel.....	35	0	35
23 Rent, Communications & Utilities.....	10	0	10
24 Printing & Reproduction.....	7	0	7
25 Other Services.....	330	2	332
26 Supplies & Materials.....	38	0	38
Total	929	61	990

Analysis of Increase

Necessary Pay.....	21
Program Funds.....	40

ABSTRACT - The International Center monitors, coordinates, and enhances Smithsonian-wide international endeavors. The Center provides support for the diverse range of Smithsonian international programs through the work of several independent divisions: the Office of International Relations; the International Gallery; the Office of Quincentenary Programs; and the Office of Conference Services. Through the International Center, the Smithsonian also supports international research programs, such as UNESCO's Man and the Biosphere Program and the Council of American Overseas Research Centers.

For FY 1991, the Institution requests an increase of 1 workyear and \$40,000 to continue pan-Institutional planning for the Columbus Quincentenary. The Institution requires \$21,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - From its inception, the Smithsonian has been an international institution. During the course of the past 140 years, Smithsonian researchers have spanned the globe, forming unique collections and establishing a worldwide network of correspondents and collaborators. Today, the Institution's international activities take place on a number of different levels, from informal scholar-to-scholar contacts to highly structured Institutional programs.

In FY 1985, the Smithsonian established the Directorate of International Activities to advance the global objectives of the Smithsonian's charter by facilitating its international research and encouraging collaborative work abroad. Following an internal program review in FY 1987, the Institution reorganized the various parts of the former Directorate of International Activities into a new International Center in April 1988. A fundamental objective of the Center is to help place the Institution's scholarly work at the service of the general public as it seeks to understand a changing international scene. Located in the S. Dillon Ripley Center of the Quadrangle Complex, the International Center provides facilities for discourse and exhibitions on a wide array of international matters. Bureau-generated programs fostered by the International Center include conferences, symposia, seminars, exhibitions, lectures, performances, film showings, and workshops. An International Activities Council, composed of the Assistant Secretaries for Research, Museums, Public Service, and External Affairs, provides oversight and policy guidance for the International Center as well as for the broad range of international programs undertaken throughout the Institution.

As part of the reorganization that established the International Center, the Smithsonian created or combined several offices to provide Institution-wide support and coordinating services: the Office of International Relations, the International Gallery, the Office of Quincentenary Programs, and the Office of Conference Services. Responsibility for the individual offices of the International Center is divided among the Assistant Secretaries on the International Activities Council.

Office of International Relations - The Office of International Relations (OIR), which reports to the Assistant Secretary for External Affairs, provides basic liaison support and coordination for the international aspects of Smithsonian research and museum programs. This responsibility includes:

- supplying guidance and information on foreign affairs and international relations;
- facilitating communications and logistical arrangements for research and participation in meetings abroad;
- assisting in drafting and negotiating agreements relating to international cooperative programs;
- assisting foreign scholars and officials who visit the Smithsonian or participate in its programs in the United States;
- compiling and updating the "Profile of Smithsonian International Activities";

-- obtaining passports and visas for Smithsonian travelers.

The Office also manages the Smithsonian Special Foreign Currency Program and other international research exchange grants programs.

International Gallery - The International Gallery, which reports to the Assistant Secretary for Museums, presents exhibitions that deal with significant global topics from various disciplinary points of view or cultural perspectives. The first two exhibitions presented in the International Gallery, "Generations" and "Tropical Rainforests: A Disappearing Treasure" illustrate this emphasis. "Generations" explored the richness and diversity of cultures from ancient times to the present as they celebrate the art and rituals associated with birth. "Tropical Rainforests" examined the destruction of the Earth's most biologically diverse habitat, using a cross-disciplinary approach that drew extensively upon research conducted at the Smithsonian Tropical Research Institute, the National Museum of Natural History, the National Zoological Park, and other international research centers.

The third International Gallery Exhibition, "Caribbean Festival Arts" opened in June 1989. Organized by the Saint Louis Art Museum, this exhibition focuses on the arts of three pan-Caribbean festivals: a widely celebrated masquerade commonly known as Jonkonnu, an Islamic festival commemorating the death of Hussein, and the pre-Lenten Carnival culminating in Mardi Gras. Exhibits explore the European, Middle Eastern, and African sources for festival themes, costumes, and accoutrements; the development of these arts in the Caribbean; their present reality in the lives of Caribbean populations; and the diffusion of these festivals to sites such as New York, Toronto, Miami, New Orleans, and London. Public programs related to this exhibition take place in the Caribbean marketplace reconstructed in the open Concourse area of the S. Dillon Ripley Center. The International Center is disseminating information about the exhibition to West Indian communities in particular, which have not routinely visited the Smithsonian.

Office of Quincentenary Programs - The Office of Quincentenary Programs, which reports to the Assistant Secretary for Research, coordinates and supports the development of a wide range of programs at the Smithsonian to commemorate the 500th anniversary of Christopher Columbus' landfall in the Americas. For the Smithsonian, the occasion offers an opportunity to take a closer look at the past, present, and future implications of this anniversary. The Smithsonian promotes the development of a centrally coordinated, pan-Institutional Quincentenary program to reflect the diversity of Smithsonian research interests and provide the general public with a broader perspective on the significance of the Columbian voyages.

Twenty bureaus and offices of the Smithsonian are planning programs in collaboration with scholars from throughout the United States and abroad. This interdisciplinary and international dimension will highlight the experiences and contributions of all peoples who were affected by Columbus' voyages of exploration. Through these programs, the Smithsonian aims to present an alternative to traditionally Eurocentric interpretations of the history of the Americas.

To inform the public about all the Quincentenary activities at the Smithsonian and to provide a forum for discussion of relevant themes, the Office will publish a quarterly newsletter, "The New World," with editions in English, Spanish, and Portuguese beginning in 1990. As part of the Institution's Special Employment

Initiative, funding for a program specialist position was provided in FY 1990. This position is responsible for the coordination and continued development of "The New World," as well as the development of a database of contacts from the academic, professional and business communities in Latin America.

The Office of Quincentenary Programs is working with other Smithsonian bureaus, as well as with scholars from native-American, African-American, Hispanic, and other minority communities. Currently, the Office is completing the development of educational materials and a game related to the symposium "Ice Age Origins: Americans Before Columbus." A series of scholarly and public symposia will continue through 1992, exploring a diverse range of topics related to the encounters of cultures. These programs involve scholars from the Smithsonian, and other institutions in the United States and Latin America. The Smithsonian will publish symposia proceedings and, in some instances, Smithsonian staff will develop thematically relevant educational materials for varying grade levels. In keeping with its interest in developing outreach activities, the Office has established the American Indian Outreach Program to plan a traveling exhibition on ethnobotanical themes. In collaboration with native-American educational and tribal centers, the exhibition will circulate to native-American communities across the country. The Office coordinates plans for "The Buried Mirror," a five-part television series written and narrated by Carlos Fuentes. The series is the centerpiece of the Smithsonian's Quincentenary commemoration.

In spring 1989, the Smithsonian and the University of Maryland co-sponsored a scholarly symposium entitled "Violence and Resistance in the Americas: The Legacy of Conquest." Teachers, professors, students, and the interested public attended the two-day event. In the fall of 1990, the Office will sponsor a public symposium entitled "The Image of Women in the Americas: Myth and Reality." Plans for future Quincentenary symposia include a teleconference that will focus on ecological exploitation and cultural diversity using the Andean region as a case model. The symposium will use satellites to link communities throughout the hemisphere. During 1991, the Office will organize a symposium on the Americas in cooperation with a number of Ibero-American countries.

The Smithsonian's Columbus Quincentenary commemoration will also serve as the basis for the establishment of a permanent program focusing on the history and cultures of the Americas. As part of this plan, the Institution has initiated several programs that lend themselves to a permanent presence after the Quincentenary year is past. They include the Program in Hispanic American History at the National Museum of American History, the American Indian Outreach Project, an "Institute of the Americas" and the Smithsonian Quincentenary Council of the Americas. The Office of Quincentenary Programs is coordinating bureau-based planning for the last three of these initiatives.

After the Quincentenary, the American Indian Outreach Project will continue to develop programs that will appeal to the interests of American Indian communities. The Smithsonian would circulate these exhibitions outside of Washington and publish related materials for distribution to American Indian students.

As another long-term initiative developing out of the Quincentenary, the Smithsonian is looking into the possibility of establishing an entity with the provisional title of "Institute of the Americas," which should facilitate a scholarly exchange concerning intellectual, cultural, ecological and other issues that affect this hemisphere. This issue-oriented approach can help to solve such problems as the

exploitation of our natural and cultural resources. Non-Smithsonian scholars and policy makers will come to the Institution to pursue research in these fields and to share their ideas and perspectives with Smithsonian staff. The Institution is currently planning first to create a Quincentenary Council of the Americas in support of the Quincentenary and then found the proposed Institute. The Office of Quincentenary Programs is currently identifying prominent businessmen and scholars from the United States, Latin America and the Caribbean to serve on this Council. In this capacity, members will establish goals, identify problems and issues on which to focus, and help to secure funding for the Institute.

Office of Conference Services - The Office of Conference Services, which reports to the Assistant Secretary for Public Service, schedules and coordinates conferences and workshops initiated by scholars and staff throughout the Institution. Each year the Smithsonian sponsors approximately 50 professional meetings, ranging from small workshops to major international conferences. For many years, the responsibility for handling all of the logistics of each meeting, from the early conceptual stages through the actual meeting, rested exclusively with the sponsoring research or curatorial department. Faced with these additional duties, the departments or bureaus often found it necessary to hire temporary coordinators. To deal more efficiently with such organizational details and logistical matters, the Institution created a central Office of Conference Services in 1988. This Office now works with sponsoring bureaus, offering the necessary level of support for specific meetings on a case-by-case basis. In FY 1989, for example, the Office handled the logistical arrangements for several dozen conferences, including the Forum on Global Change, the Eighth Triennial Symposium on African Art, and the third annual World Food Colloquium.

Support for International Research - In addition to the new offices established within the International Center, the Smithsonian continues to support other programs in international research under the International Center umbrella. Primary among these programs are the Smithsonian Institution/Man and the Biosphere Biological Diversity Program and the affiliated, independent Council of American Overseas Research Centers.

Smithsonian Institution/Man and the Biosphere Biological Diversity Program - In 1986, the International Center, in cooperation with the National Museum of Natural History and UNESCO's Man and the Biosphere Program, established a new program to formulate biological diversity inventory procedures and administer training in their use. Based on studies and surveys conducted in several protected areas of the United States and Latin America, including the Smokey Mountains of Tennessee, Bolivia, Peru, Ecuador, and Puerto Rico, the program developed an initial methodology for conducting detailed biological diversity inventories of species-rich areas around the world.

Though useful institutional linkages have also resulted from this program, its most important objective is the training of biologists, conservationists, managers of protected areas, and related professionals from developing countries. This training provides researchers in the field of biodiversity conservation from these countries with the skills and education necessary to independently manage and conserve their natural resources. In a number of cases, these trained researchers have later undertaken fieldwork in association with Smithsonian counterpart scholars. This program has organized training workshops for almost 200 participants in several countries of Latin America and the Caribbean, as well as in the United States. The United States Agency for International Development (USAID), Man and the Biosphere

Program, the World Heritage Fund, the World Wildlife Fund, and Conservation International have funded training activities over the last three years.

With funding provided in FY 1990, the International Center will hire a program manager for the Program. Important goals of the Program in FY 1991 include:

- to provide a team of 16-20 researchers, educators, conservationists, nature reserve managers, and other key individuals from five Latin American countries with basic training in the principles of biological diversity conservation, the management of protected areas, ecology, and related biological research;
- to arrange exchanges of scientific and technical expertise through consultations and training workshops, utilizing regionally or nationally recognized experts;
- to institutionalize these short-term intensive courses in five Latin American countries, so that authorities there may provide their own national, regional, and international training in future years.

Council of American Overseas Research Centers (CAORC) - American overseas research centers are the recognized extensions of the advanced foreign research programs of major American universities and museums. They constitute the channel through which research information about countries important to United States interests invigorates American academic institutions. These centers operate in Italy, Greece, Turkey, Cyprus, Tunisia, Morocco, Iran, Egypt, Jordan, Israel, Yemen, India, Pakistan, and Hong Kong. They provide fellowship funds, access to local research resources, logistical support, liaison with host-country officials, and library and housing facilities to thousands of American academics. The facilities of each center offer contacts for American scholars and their host-country colleagues, and their publication and seminar programs disseminate research results worldwide. The private structure of the centers and the unbiased research they promote make them respected focuses of American academia in the countries in which they operate. As a result, they contribute considerably to a positive United States image abroad.

The Council of American Overseas Research Center facilitates and coordinates the work of its 14-member institutions. Federated in 1981, the existing centers create a forum to identify and address common concerns. CAORC links its member research centers, United States and foreign institutions, and scholars into a global information network. It fosters collaboration among research centers to strengthen academic programs and administrative procedures and sponsors international research projects. The Council undertakes the establishment of new centers in areas where research exchange opportunities are lacking.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the Institution requests an increase of 1 workyear and \$40,000 to continue pan-Institutional planning for the Columbus Quincentenary. In 1992, the world will commemorate the 500th anniversary of the voyages of exploration of Christopher Columbus. The Smithsonian began planning in 1985 to develop a wide range of programs to commemorate the Columbus Quincentenary. Through these programs, the Institution will contribute to a broader public understanding of the complex issues surrounding the 1492 landfall and the subsequent five centuries of interactions between European and indigenous cultures.

Through the Office of Quincentenary Programs, the Smithsonian is developing long-term collaborative initiatives with Latin American institutions on timely issues of mutual concern. In addition, the Office is working with several Smithsonian bureaus to plan a model program incorporating Quincentenary themes into small traveling exhibitions for distribution to native-American communities.

To assist current staff in the coordination of these activities, the Office requests funds to support a research assistant (1 workyear and \$38,000) and the development of educational, outreach, and promotional materials (\$2,000). As programs accelerate and organizations and countries become more aware and interested, it is imperative that last-minute research efforts be initiated to accommodate new activities, as well as to determine the accuracy of new data as it is uncovered. After the Quincentenary, this position would help support research conducted through the new Institute of the Americas.

The Columbus Quincentenary programs will not only commemorate the historic event but also examine the cultural, historical, and scientific implications of the pan-hemispheric encounter. Expanded support for the programs and activities developed by the Office of Quincentenary Programs will enable the Smithsonian to make the Columbus Quincentenary an important contribution to international understanding.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Allotments provide funds to support planning and development of research and exhibition programs for the International Center and for administration of Columbus Quincentenary activities. A special purpose fund provides stipend support for international scholarly exchanges aimed at strengthening the Smithsonian's institutional linkages.

Restricted Funds - Restricted funds consist of gifts, grants, and other donations from individuals, foundations, organizations, and corporations for specific purposes, such as undertaking research abroad, supporting exchanges of researchers and collections, mounting exhibitions and staging performances, screening films, and other public presentations in the International Center.

ADMINISTRATION

ADMINISTRATION

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	291	17,244	206	11,315	17	2,023	-	116	-	-
FY 1990 -Estimate	349	19,945	215	14,755	17	1,556	-	128	-	-
-Base	349	20,339								
FY 1991 Estimate	384	23,611	223	15,882	17	1,807	-	129	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	349	35	384
11 Personnel Compensation.....	12,070	1,455	13,525
12 Personnel Benefits.....	3,644	692	4,336
13 Benefits to Former Employees.....	146	0	146
21 Travel.....	133	0	133
22 Transportation of Things.....	15	0	15
23 Rent, Communications & Utilities.....	100	247	347
24 Printing & Reproduction.....	105	-18	87
25 Other Services.....	3,119	718	3,837
26 Supplies & Materials.....	574	14	588
31 Equipment.....	428	164	592
41 Grants.....	5	0	5
Total	20,339	3,272	23,611

Analysis of Increase

Necessary Pay.....	625
Program Funds.....	2,312
Workers' Compensation.....	264
Personnel Payroll System.....	71

ABSTRACT - Administration includes central management, planning, oversight, and review provided by the Offices of the Secretary, Under Secretary, Assistant Secretary for Administration, General Counsel, and Treasurer. It also covers a wide range of specialized administrative and technical offices, such as Inspector General, Business

Management, Congressional Liaison, Equal Opportunity, Facilities Services (responsible for Design and Construction, Plant Services, Protection Services, Environmental Management and Safety, and Architectural History and Historic Preservation), Financial Management and Planning, Accounting and Financial Services, Risk Management, and Sponsored Projects. Other offices in this group include Information Resource Management, Management Analysis, Personnel Administration, Planning and Budget, Printing and Photographic Services, Procurement and Property Management, Special Events, and Travel Services. These units receive both appropriated funds and nonappropriated Trust funds for their operating support in approximate balance to the overall funding of the Institution. However, Trust funds entirely support some offices, such as Business Management, Sponsored Projects, and Risk Management.

For FY 1991, the requested increase for administrative units totals 28 workyears and \$2,162,000. These increases will enable the Institution to augment the Inspector General function (1 workyear and \$31,000) and allow for delegated examining authority and other personnel support (9 workyears and \$426,000). In addition, the requested increases will allow a major expansion of the Institution's automation efforts (4 workyears and \$952,000) and a consolidation of rent administration responsibilities (1 workyear and \$47,000). Furthermore, the proposed increases will improve accounting systems (13 workyears and \$505,000) and provide space for new or expanding public service and management activities (\$201,000). In addition, the Institution requires \$625,000 for Necessary Pay for existing staff funded in this line-item.

Also contained in this line-item are 4 workyears and \$248,000 associated with the Institution's special employment initiative. Justification for these resources appears in the central Special Employment Initiative section of this budget. The Institution requests \$264,000 for workers' compensation and \$71,000 for the Personnel Payroll System. The Uncontrollable Increases section of this budget request contains justifications for these increases.

Decreases totaling \$98,000 partially offset the requested increases. These include nonrecurring expenditures in FY 1990 in the Office of Information Resource Management for the personnel payroll system (\$50,000) and in the Office of Accounting and Financial Services related to the new accounting system (\$48,000).

PROGRAM - The Office of the Secretary, with the assistance of the Office of the Under Secretary, is responsible for management and administration. This responsibility includes policy determination, program planning, legislation, and oversight and performance evaluation of activities. The Office of the Assistant Secretary for Administration, with the assistance of the Director of Facilities Services, is responsible for administrative and facilities services.

The Office of the Inspector General (OIG) performs all internal audits and investigates fraud, waste, and abuse, or white-collar criminal activity. OIG audits Federal programs as well as Trust-funded activities. The Office reports audit results and recommends measures to improve program administration. OIG also audits claims, cost proposals, and cost and pricing data arising from contracts, grants, and other financial agreements. OIG investigates allegations of criminal activities by employees or contractors. The results of these inquiries serve as the basis for appropriate administrative, civil, or criminal remedies. OIG staff also investigates areas with the potential for fraud and abuse. The Smithsonian's certified public accountants consider the work of the Office in determining the nature, timing, and extent of their audit procedures. The Institution provides reports on audits and

investigations to the Audit and Review Committee of the Board of Regents and to the Congress.

The Office of the General Counsel (OGC) provides counseling to the Smithsonian Board of Regents and the Secretary. The Office also advises other Institutional officers on pertinent legal matters; coordinates and oversees litigation and other adversarial proceedings; and reviews administrative claims arising out of Smithsonian operations. Generally, OGC monitors all aspects of Smithsonian activities for legal implications as new developments in the law affect the Institution.

The Office of the Treasurer oversees financial management and, through the Business Management Office, certain Institutional income-producing activities, including museum shops, mail orders, product development and licensing, and concessions. Financial management duties rest in the Office of Accounting and Financial Services, the Office of Financial Management and Planning, the Office of Sponsored Projects, and the Office of Risk Management. These offices handle accounting, payroll, financial reporting, financial systems development, administration of grants and contracts, insurance matters, Treasury and bank relations, and investment management.

The Office of Congressional Liaison, reporting to the Assistant Secretary for External Affairs, develops and maintains the Institution's relationships with the Congress; prepares and clears legislative materials; arranges Smithsonian participation at legislative hearings; and acts as central liaison with Federal agencies and organizations with related interests.

The Office of Equal Opportunity plans, conducts, and monitors a positive action program to ensure equality in employment practices and program activities. Major efforts include affirmative action programs, program and facility access for disabled persons, employee counseling and complaint processing, upward mobility, special programs for women and Hispanics, and community outreach to minority and women's groups in Washington, D.C., and elsewhere.

The Office of Facilities Services directs a wide range of security, operation, maintenance, and repair programs for Smithsonian facilities as well as safety and health programs for staff and visitors. It oversees modifications and improvements to the physical plant to support growth in programs and activities and develops strategies for planning for future facilities development and utilization. Reporting to the Director of Facilities Services are the Office of Environmental Management and Safety (OEMS) and the Office of Architectural History and Historic Preservation (OAHP). OEMS advises and assists Smithsonian bureaus concerning fire protection for their facilities and the National Collections. OEMS also monitors occupational safety and health, including industrial hygiene and hazardous materials control and reviews, disseminates, and implements the requirements of all new fire, safety, health, and environmental laws, regulations, and standards. OAHP compiles and updates the architectural history of the Smithsonian for research and publication. The Office reviews design and construction projects as they apply to historic preservation regulations to ensure compliance with Section 106 of the National Historic Preservation Act and oversees the Smithsonian Furnishings Collection.

The Office of Information Resource Management (OIRM) helps determine information resource management policy; oversees planning for automated systems and information technologies; coordinates the Smithsonian Information Resource Management (IRM) program; ensures the integrity and security of automated Institutional data; oversees

the application of computer and communications technology to the Smithsonian's scientific, scholarly, and management information needs; ensures compatibility among systems; and facilitates user access information systems and computer processing. OIRM acquires, develops, and maintains automated information processing and data communications systems; administers the Smithsonian's data processing cost centers; operates computer systems and voice and data communications networks; and offers pertinent training to users.

The Management Analysis Office provides advisory assistance to Smithsonian administrative operations. The Office studies organizations, systems, and procedures; prepares and distributes management's policy statements and operational guidelines; undertakes a periodic internal controls review of the Institution; oversees the Institution's forms management program; and publishes a biweekly staff bulletin.

The Office of Personnel Administration (OPersA) provides personnel services, advice, and assistance to managers and employees of the Institution. Within the laws and regulatory requirements of Federal oversight agencies and within the policies of the Institution, the Office oversees recruitment, staffing, and position classification; wage and salary administration; performance management and merit pay systems; employee relations; and benefits administration. The Office also is responsible for labor-management relations; training and career development; employee assistance; job and retirement counseling; workers' compensation; unemployment insurance; personnel policy development; personnel management evaluation; and records and data processing and maintenance.

The Office of Planning and Budget (OPB) coordinates Institution-wide, long-range planning efforts, advises management on related matters, and prepares the Five-Year Prospectus. The Office formulates the Institution's consolidated Federal and nonappropriated Trust fund budgets and submits them for review and approval by the Secretary and the Board of Regents. OPB prepares justifications for approved budgets for submission to the Office of Management and Budget (OMB) and to the Congress. OPB serves as liaison with OMB and Congress on budgetary matters. OPB monitors appropriated budgets and nonappropriated Trust fund budgets to ensure the Institution meets program needs, achieves budgetary goals, and maintains accountability. The Office maintains central financial information data bases for use in management reports, budgetary planning, and special analyses.

The Office of Printing and Photographic Services (OPPS) offers technical advice, guidance, and photography and duplicating services to curatorial, scientific, technical, and administrative staff. Photographic services include studio and on-site photography, photographic copy restoration, printing, preservation of originals under archival conditions, development and maintenance of an automated catalogue of photographs, investigation and application of new photographic technologies, and sale of materials to the public.

The Office of Procurement and Property Management (OPPM) provides central logistical support and acquisition policy guidance. This responsibility is achieved through policy administration, planning, management, and coordination of the procurement, contracting, property management, and supply programs. As the Institution's principal acquisition service, OPPM procures supplies, materials, contractual services, and equipment in support of research and educational programs. OPPM also acts as the Smithsonian's space-leasing agent. In addition, OPPM provides preacquisition policy guidance and administers contracts on behalf of various

Smithsonian units. OPPM ensures that the performance of these functions is effective and conforms to Federal and Smithsonian policy, rules, and regulations.

The Office of Special Events (OSE) plans, arranges, and oversees luncheons, receptions, and dinners associated with exhibition openings, seminars, lectures, and meetings. Smithsonian bureaus and offices may sponsor events or cosponsor events with outside organizations. In addition, the Office prepares and distributes a monthly master calendar of special events.

The Travel Services Office (TSO) makes travel arrangements at the lowest possible cost for Smithsonian employees to comply with Smithsonian and Federal travel regulations. The Office enforces the government contract carrier program and the Fly America Act. TSO works closely with other offices to develop and implement new and revised travel regulations and distributes announcements about pertinent changes.

Progress in Administrative and Technical Support - The Institution has placed major emphasis on administrative and support operations to ensure their responsiveness to needs. The following activities during FY 1989 and planned for FY 1990 are noteworthy:

In April 1989, the Institution established the Office of the Inspector General (OIG, formerly named the Office of Audits and Investigations) to meet the requirements of the Inspector General Act Amendments of 1988. During FY 1989, the OIG issued 14 internal audit reports, 40 contract audit reports, and 50 investigative reports on fraud, waste, and abuse affecting Smithsonian programs and operations. In October 1989, the OIG submitted its first semiannual report to the Board of Regents and the Congress on its audit and investigative activities.

The Institution's diverse programs present a wide range of legal questions and issues for advisement by the Office of the General Counsel. In addition to the continuing need to define the unique legal nature of the Smithsonian Institution in various contexts, the OGC caseload includes evolving areas of the law such as the right of publicity, hazardous waste management, sexual harassment/discrimination, drug testing, AIDS, and repatriation of native-American remains and artifacts. Ongoing matters entail trust law, Constitutional law, intellectual property rights, cultural property laws and treaties, immigration, real property transactions, contracts, labor relations, endangered species regulations, civil rights, employee standards of conduct and ethics, estates, and tax laws.

During FY 1989, the Office of Congressional Liaison (OCL) was involved with legislative activity that resulted in enactment of measures establishing a National Museum of the American Indian and providing for the disposition of native-American skeletal remains; for the reappointment of two citizen members of the Smithsonian's Board of Regents; and the appointment of two new citizen members to fill existing vacancies on the Board. Matters of pay equity, taxation, and environmental concerns, as well as proposals to build an extension to the National Air and Space Museum and to create a National Museum of African American History and Culture, also required the attention of OCL.

The Office of Planning and Budget (OPB) took action to facilitate an informed and constructive dialogue about the possibility of engaging in Institution-wide strategic planning. OPB, with a small group of central and bureau managers, previewed a series of educational sessions with leading planning experts who had worked with a variety of organizations, including the private sector, government agencies, nonprofit

organizations, and colleges and universities. The Office refocused the Five-Year Prospectus on the Secretary's "Areas of Emphasis" and programmatic goals. This change followed other improvements to the internal planning process that brought greater focus on broad management and program issues, called for specific planning objectives, and identified a series of planned action steps over the next five years to achieve these objectives. The Office also implemented the first phase of a new automated Personnel Cost Projection System (PCPS) and issued additional releases to the Smithsonian Institution Budget Manual.

A major priority of the Office of the Treasurer is to improve the centralized accounting and financial systems. The Smithsonian contracted with the U.S. Department of Agriculture's National Finance Center (NFC) to process both its Civil Service and Trust payrolls. The Institution converted to the NFC system in November 1987 and, over the course of FY 1988 and FY 1989, refined this relationship. The NFC system has significantly reduced errors and will improve reporting to bureaus and offices. The Offices of Financial Management and Planning (OFM&P) and Accounting and Financial Services (OAFS) continue to work closely with the Offices of Planning and Budget and Information Resource Management to implement the new Personnel Cost Projection System using NFC data processed by the Institution's new accounting software. Beginning in April 1988, the Institution solidified specifications as a first step in developing a new financial system in response to directives of the Office of Management and Budget. Following a rigorous procurement process, the Office of Financial Management and Planning purchased off-the-shelf accounting software. OFM&P, consistent with government-wide efforts, began preliminary work that will lead to conversion during FY 1990 of the Institution's general ledger and automation of its accounts payable and procurement systems. The Treasurer initiated steps to strengthen inventory procedures within the merchandising activities under the Office's control as well as administrative oversight in the Office of Sponsored Projects. With the active participation of many bureaus and offices, the Office of Risk Management is pioneering an institutionalized Disaster Preparedness Program aimed at protecting staff and visitors while securing collections in the event of catastrophe. The new Trust-funded restaurant facility at the National Air and Space Museum opened in August 1988, greatly enhancing public food services.

The Travel Services Office continued to improve the quality and efficiency of the services offered to Smithsonian travelers. Through training and automation, the Office shortened response time for hotel and car rental requests. TSO is working cooperatively with the Office of Accounting and Financial Services in implementing the recommendations of the Office of the Inspector General in the "Report on Audit of the Diners Club Credit Card System" to eliminate the duplication of effort in entering data into computer systems.

The Office of Printing and Photographic Services (OPPS) initiated three projects of national importance. Since it opened almost six years ago, the cold storage facility has become one of the most successful and imitated photographic facilities of its type. A limited expansion in FY 1989 kept pace with the increasing numbers of photographs maintained in the collection. Under a research program in applied photographic preservation, OPPS continues testing new toning solutions to eliminate a suspected carcinogen from Smithsonian photographic laboratories. OPPS modified its testing procedures to include newly developed hydrogen peroxide fuming equipment that will increase the validity of the project results. In its continuing experiments with still-video systems for collections management projects, the Office is learning how to adapt photography to a new technology of electronic still-imaging. These experiments will offer state-of-the-art techniques for capturing and using collection images for a

wide range of applications. The Office recently completed a project with the School of Visual Communications at Ohio University in the experimental use of electronic images for newspaper reproduction.

In 1989, the Office of Information Resource Management (OIRM) implemented new Collections Information System (CIS) data bases within the National Museum of Natural History for the Mammals, Birds, Reptiles and Amphibians, and Botany collections. CIS work is under way on Entomology and Anthropology data bases and the permanent collections of the National Museum of American Art and the National Air and Space Museum. The National Museum of American History and OIRM defined functional and data requirements in advance of the migration from the Museum's outdated system to CIS. OIRM implemented the first phase of Generic Report and Search Processor that allows users to define and generate their own reports. A management and registration system for the Resident and National Associate Programs to control scheduling, booking, and charging for Smithsonian events nears completion.

OIRM, the Office of the Treasurer, and the Office of Financial Management and Planning supported the acquisition of a new general ledger and budgeting capability for the Institution. This year also saw the implementation of an integrated staff identification, telephone book, and mailing list system; an automated staff "locator" system; and a digital paging system linking the Museum Support Center, the Mall, and the National Zoo. OIRM implemented the first phase of an Institution-wide electronic mail system and completed a study to determine future requirements for data communications throughout the Smithsonian. OIRM will establish data communications service between the Mall and the Smithsonian Tropical Research Institute in Panama by the end of 1990.

OIRM trained more than 1,100 Smithsonian staff in the use of microcomputer and mainframe systems and handled more than 3,600 computer-related inquiries at its "HELP" desk. The Office initiated a long-term IRM planning process and established IRM partnerships across the Institution. This new cooperative and comprehensive approach to IRM planning will help to coordinate future budget requests and information systems planning. OIRM also undertook a self-evaluation effort to assess its ability to meet the needs of the Institution. This effort positions OIRM to fulfill its mission and take advantage of appropriate advances in information technology.

The Office of Procurement and Property Management continued to increase the number, complexity, and total dollar value of transactions processed. Contractor work is progressing on the installation of new transformers throughout 13 museums to relieve PCB dangers before the Environmental Protection Agency deadline. The contractor completed the Smithsonian Information Center construction, and the Center opened to the public in November 1989. The Property Management Program continues to produce savings for the Institution. The Institution better utilized excess property in FY 1989 through a semiautomated excess property recording and review system. Redesigned warehouse space allows more efficient storage and retrieval.

Major activity in the Office of Personnel Administration centered on the study completed by the National Academy of Public Administration, Improving Personnel Operations and Policies. The Institution made some progress in implementing the report's recommendations. Components of the report speak to the efficiency and effectiveness of personnel operations, the responsiveness of the system, affirmative action efforts, and opportunities to be explored, including human resource management.

In FY 1988 and FY 1989, the Office of Facilities Services implemented a more formal goal-setting process to define program direction and provide a framework for strengthening program management and increasing support for the Institution's activities. Human resources and organizational development are key issues, while goals emphasize leadership, cross-development, and training for individual growth of staff members and increased productivity. The Office is working to improve the quality of new hires, with emphasis on attracting minority and women candidates for professional and managerial positions. In addition, the Office is developing management systems for tracking facilities management activities, analyzing program effectiveness, and sharing information within the Facilities Group and with other Smithsonian organizations. The Office has further defined the process for long-range facilities planning and development and has prepared a ten-year plan for construction or acquisition of major new facilities.

The Office of Environmental Management and Safety revised the Smithsonian Handbook on Safety and Environmental Management to expand its scope and current relevance. Additionally, working with the Office of Museum Programs, the Office conducted a three-day workshop for small domestic and foreign museums and with other educational and cultural institutions. This unique workshop addressed program development and problem solving for fire protection, disaster planning, occupational safety and health, and environmental management.

During FY 1989, the Office of Architectural History and Historic Preservation (OAHF) began a research project on the American Art and Portrait Gallery Building and initiated studies for a guide to all Smithsonian buildings. The Office also started a videotape project to record restoration and preservation activities in the Smithsonian Institution Building. The Office organized the architectural records and photographs and augmented those materials with records from the Smithsonian Institution Archives. Members of the staff delivered papers before professional societies, submitted a paper for publication, and supervised the work of graduate and undergraduate students. OAHF has contracted for the reproduction and sale of pieces in the Smithsonian Furnishings Collection. Royalties on the sale of these reproductions will allow OAHF to make future acquisitions for the Collection.

EXPLANATION OF PROGRAM INCREASE - For FY 1991, the requested increase for administrative units totals 28 workyears and \$2,162,000 as follows:

<u>Activity</u>	<u>FTE</u>	<u>Amount</u>
Inspector General	1	\$31,000
Treasurer	13	\$505,000
Office of Facilities Services	1	\$47,000
Office of Information Resource Management	4	\$952,000
Office of Personnel Administration	9	\$426,000
Additional Space Rental Requirements	0	\$201,000

Decreases totaling \$98,000 partially offset the requested increases. These include nonrecurring expenditures in FY 1990 in the Office of Information Resource Management for the personnel payroll system (\$50,000) and in the Office of Accounting and Financial Services related to the new accounting system (\$48,000).

Office of the Inspector General (1 workyear and \$31,000) - The requested increase will deter criminal activity and other forms of misconduct at the Institution by increasing the expertise of the OIG investigative function. The investigative function addresses a wide variety of technical Smithsonian activities including

procurement, financial management, and collections management. Investigations in these areas typically require a high degree of technical knowledge in the financial management field.

OIG auditors supplement the skills of the investigative staff in conducting such investigations when availability permits. With increases in OIG investigative cases, it has become increasingly more difficult to assign audit personnel to the investigative staff and still meet audit obligations.

The requested position for an auditor (1 workyear and \$31,000) to support the investigative staff will enable the OIG to conduct complex investigations and still meet the OIG audit priorities in a timely manner.

Office of the Treasurer (13 workyears and \$505,000) - The requested funding will support the implementation of a new Financial Accounting System that will produce more timely and accurate financial information. The System will readily respond to internal and external audits; it will conform to the Federal Core Financial Management System Requirements and provide information pertinent to Internal Control Systems. The Institution will install the core of the System (the general ledger, accounts payable, and financial reporting programs) by the end of FY 1991. To ensure that these programs are operating at acceptable standards, they must be supported by computer system analysts and specialists specifically schooled in the software acquired. These positions will allow:

- full and accurate documentation of the System;
- a stringent schedule for reconciling accounts;
- maintenance and updating of accounting policy and procedures.

These essential support functions will make the new Financial Accounting System feasible and provide the means to keep it up-to-date and adaptable to changes in the financial environment.

The new Financial Accounting System will depend upon sophisticated software and hardware and a new communications network. The communications network will gradually expand to financial management users in bureaus throughout the Institution. The requested funding will provide the technical personnel and resources needed to facilitate the associated accounting interface with the Institution's mainframe computer and provide the ability to plan and implement changes to the software mandated by regulations or recommended by management.

The technical personnel will maintain up-to-date **documentation** of the accounting system. The personnel request is for two computer systems analysts and three computer specialists (5 workyears and \$166,000). Additional funds are requested for software (\$50,000) to upgrade the communications network and for equipment (\$60,000) to expand the personal computer user base within the Office of Accounting and Financial Services and the accounting service units located in the museums.

Reconciling accounts is a critical internal control function. The procedure is valuable since it identifies posting errors. Reconciling an account can expose unauthorized transactions and transactions omitted either intentionally or unintentionally. Internal and external auditors are constantly examining the account reconciliations on file in the Office of Accounting and Financial Services. Past and

present audit reports reflect inaccuracies in Smithsonian postings that could have been avoided if accounts were reconciled in a more timely and complete manner. Currently, all reconciliations are essentially done by hand. Staff time available to perform reconciliations approximates the same level of 1979, yet the number of accounts and volume of transactions have increased eight-fold. The requested funding will provide three accountants (3 workyears and \$96,000), and three accounting technicians (3 workyears and \$63,000) to operate an account reconciliation program that meets the requisite standards of timeliness, completeness, and audit worthiness.

Maintaining updated accounting policy and procedures is a never-ending job. Whether it be creating new or revising the old, extensive analysis of the Institution's financial environment is required to develop policy and procedures that comply with generally accepted accounting and internal control principles. The job of revising a policy or procedure is not completed until it is implemented and later tested for compliance. The new Financial Accounting System will require a substantial rewrite of existing accounting policies and procedures. The requested funding will provide two systems accountants (2 workyears and \$70,000) to update present policies and procedures and direct more work hours toward implementing and testing.

Office of Facilities Services (1 workyear and \$47,000) - A recently completed study, noting the increasing use of leased space, recommends that the Institution consolidate the administration of associated rental accounts, now a collateral part-time function involving four support units, within the Office of Facilities Services. This change will assure the integrity and effective management of these accounts and the considerable funding involved. To implement this necessary change, the study indicated the need for a full-time position dedicated to these purposes. Accordingly, the additional position will serve as a focal point for all matters concerning rentals, including space requirements, projections, budgeting, space management, funding administration, reporting, and related functions.

Office of Information Resource Management (4 workyears and \$952,000)- Ironically, when the Smithsonian opens its "Information Age" exhibit at the National Museum of American History in 1990, it will be ten years behind in its own use of the advanced information technologies on display. Information technology tools enable the Institution, as a national resource, to provide productive research and meaningful educational programs. These technologies include computers, computer programs, systems development methods, and communication lines and networks. While the Smithsonian pioneered the use of automation for museums in the late 1960s, the Institution has not kept pace with technology. Its first on-line objects collections system, implemented less than five years ago, uses ten-year-old technology. Modern research, education, and business demands for information by the public and the Institution exceed the capabilities of the Institution's existing technologies. Many of its collections rely upon manual card and paper filing systems that require labor intensive research techniques for use. Most collections and research information is not available to the public, and scientists and scholars can only access small subsets of Smithsonian files. The Smithsonian's leading role in research and education is in jeopardy. To reclaim its position as a leader in research, education, and collections management, the Smithsonian must utilize advanced information technologies to a far greater extent.

However, today's technologies require significant, long-term investments to implement and maintain. Not only are private providers of many essential automation services nonexistent, current Smithsonian budgets fail to cover the rising costs of information technology. There is a chasm between available resources and increasing

technology demands and costs. Addressing this infrastructure gap with concomitant staff and dollars is the only solution to meet today's research, education, and administrative objectives and to lay the foundation for future advancement.

An Institution-wide Information Resource Management (IRM) advisory group of users advocates a wide range of better information resource technology services. The requested resources address these needs and will advance objectives in three areas: **planning, development, and services.**

A stronger planning capability will define how information technologies can meet established goals. Because of other pressing operational and resource demands, OIRM currently conducts only limited planning activities and has limited capacity to coordinate Institution-wide IRM planning. The lack of specific resources for this purpose prohibits the Institution from producing the IRM plan required by OMB A-130 and other applicable regulations. Because information planning activities suffer from a lack of coordination, there has been a troubling proliferation of incompatible equipment and application systems. For lack of staff that can be devoted to this function, there is no long-term plan to integrate, and maintain systems or to convert to a more efficient, effective, and technologically advanced operating environment. With 1 workyear and \$80,000 OIRM will develop a long-term, integrated, Institution-wide IRM plan. This IRM plan will provide a more systematic means for keeping pace with advancing technologies. This plan will also allow the Institution to estimate more accurately its computer capacity requirements and thereby avoid future computing deficiencies. A long-term IRM plan will permit the Institution to select appropriate advanced technologies and to integrate Smithsonian priorities and requirements.

Development includes the design, implementation, and maintenance of Institution-wide computer systems. Current resources have been and are increasingly inadequate both to meet long pending and new requests for systems development and to maintain existing information systems. The problem is exacerbated by four incompatible computers. The OIRM's current systems development base consists of 10 workyears and approximately \$200,000 in contract assistance to serve the entire Institution. These limited resources cannot make measurable progress in automating the Institution's vast collections for the varied purposes of exhibition, research, educational study, and publication. To illustrate, less than 3 percent of the Institution's collections are currently automated for these purposes. With 3 additional workyears and \$227,000, OIRM will give top priority to information systems most critical to the Smithsonian's mission. These staff will facilitate the completion of the Collections Information System (CIS), which will offer on-screen access to, and better accountability for, the National Collections. CIS will also combine with library and archival systems currently on separate hardware in the Smithsonian Bibliographic Information System (SIBIS). Through these links and others to facilities management, geographic, and administrative systems, CIS will create vast opportunities for research and exhibits. CIS will support curators, research scientists, and the public worldwide.

Services include computing and communications activities that support automation of, and access to, information. OIRM currently operates four computer systems used extensively throughout the Institution. The costs of meeting current and growing user demands for computing services and escalating support costs for maintenance and systems software have already far surpassed available resources. With its request for \$645,000, OIRM could support sufficient computer capacity to meet current and short-term projected computer usage. However, substantial computer upgrades are expected beginning in 1992 with completion of systems migration from the Honeywell and major enhancements to the Smithsonian Financial Accounting System. Without these added

funds, current operational systems will deteriorate. This deterioration would reverse the limited benefits of past automation of program and administrative functions. With the requested additional resources Smithsonian collections managers, researchers, librarians, and administrators will continue to benefit from direct and automated access to their data.

For the Smithsonian to carry out effectively its mission "to increase and diffuse knowledge," it must utilize advances in information technologies. Without sufficient means to automate, and assure access to, its diverse research, education, and cultural information resources, the Smithsonian cannot achieve its public service goals. Current and future museum visitors and scholarly researchers grew up in the "information age" and are computer literate. Visitors require interactive exhibits and automated public access to collections, research, archival, and library holdings. The Smithsonian must recover from infrastructure gaps and acquire resources to make optimum use of information technologies. With additional resources, the Institution will create and maintain a long-term IRM plan, improve the delivery and maintenance of information systems, and increase the level of computer and communications services.

Office of Personnel Administration (9 workyears and \$426,000) - The Institution has often lost good job candidates for its various specialized positions because of the length of time involved in the hiring process. To overcome this problem, the Office of Personnel Administration (OPersA) has delegated examining authority from the U.S. Office of Personnel Management (OPM) for some 14 core occupations including positions in the research, curatorial and security classifications. However, to capitalize upon its delegated authority, the Institution must have additional staff to undertake these examinations. These staff will expedite the hiring process, concurrent with parallel efforts to recruit more women and minorities in such positions.

Greater delegated personnel authority follows from OPM's current policy and recommendations of various study groups, such as the Volker Commission. With this new authority, the Institution's personnel office will act as OPM's agent and examine for selected occupations peculiar to the Smithsonian. As a result, the Institution will eliminate examining delays and better coordinate recruitment, internal placement, and promotions. It will also enable the Institution to attract applicants whose educational and experience backgrounds better match the job needs of the Smithsonian. The Institution requires 5 workyears and \$276,000 to staff this new authority effectively.

Even before receiving delegated examining authority, staffing in OPersA had not kept pace with the recent growth of the Institution. There has been a slow deterioration of the level and quality of services and responsiveness to the public. In its May 1989 report Improving Personnel Operations and Policies, the National Academy of Public Administration observed, "A 1987 report by the President's Council on Management Improvement endorsed 1:72 as a government-wide benchmark" for a personnel-to-employee ratio. The Academy cited Smithsonian's personnel-to-employee ratio as 1:92. It further recognized that this "benchmark does not represent an ideal, but is a standard against which to judge the adequacy of OPersA's staffing level when considering a variety of factors." The requested increase of 4 workyears and \$150,000 is a first step in the incremental reduction of this staffing gap and will result in better and more timely service to the Institution and the public.

Additional Space Rental Requirements (\$201,000) - The Institution is under increased pressure to provide space on the Mall for new or expanding public service

and management activities. There is special demand for space in the Castle (much of which is allocated to the highly successful new Visitor Information Center and to the Woodrow Wilson Center) and in the Arts and Industries Building (which is used increasingly for education purposes). These needs have been met largely by the centralization of administrative support activities in nearby commercial space at L'Enfant Plaza, where the Institution presently leases 99,000 square feet of space. This trend toward leasing nearby space for administrative functions is likely to continue with available Castle space allocated to senior management functions and the Arts and Industries Building devoted to activities having requirements for public interaction. The Institution anticipates, for example, that the development effort will require expansion in the Arts and Industries Building. With all present space allocated, it will be necessary to relocate one or more other activities to L'Enfant Plaza. To meet this need, the Institution requests funding for the acquisition and preparation of an additional 5,000 square feet of space. Using the Institution's cost-sharing policy, the 70 percent Federal share is \$155,000 based on estimated rental forecasts of \$31.00 per square foot of space. In addition, a one-time increase of \$46,000 is sought partially to cover the costs of preparing this space. The Smithsonian will cover the remaining 30 percent of the rental costs of \$65,000 and modification costs of \$19,000 from Trust funds.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Funding of these centralized services from both appropriated and nonappropriated sources produces a ratio of Federal and Trust fund administrative support approximately in proportion to the operating program expenditures of the Institution as a whole. The amounts shown under Unrestricted General represent administrative expenditures for those units that are organizationally under Administration. Other units that receive administrative allotments appear in the appropriate section of the budget request. For example, administrative costs for the Smithsonian Astrophysical Observatory appear within its nonappropriated Trust funds section. This section also includes expenditures for producing, distributing, and marketing photographic material and slide sets and funds to help defray the costs of the Office of Printing and Photographic Services. The Office of Equal Opportunity receives a program allotment that supports community outreach through exhibits and publications specifically aimed at women and minorities. Funds also provide for the identification and implementation of new financial and administrative management systems. Special Purpose funds include gifts received through unrestricted bequests that, in accordance with the Bylaws of the Board of Regents, subsequently transfer to the endowment. Anticipated expenditures in the Special Purpose category include support of studies in ornithology, computer conversion costs, a computer cost center, and small amounts used for legal seminars and research.

Restricted Funds - This category includes foundation grants for scientific research publications and general research projects and expenditures against investment income earned on endowment bequests.

FACILITIES SERVICES

OFFICE OF DESIGN AND CONSTRUCTION

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	40	2,337	9	488	-	2	-	-	-	-
FY 1990 -Estimate	44	2,757	9	434	-	-	-	-	-	-
-Base	44	2,815								
FY 1991 Estimate	45	2,901	9	449	-	-	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	44	1	45
11 Personnel Compensation.....	2,100	74	2,174
12 Personnel Benefits.....	300	12	312
21 Travel.....	20	0	20
23 Rent, Communications & Utilities.....	25	0	25
24 Printing & Reproduction.....	100	0	100
25 Other Services.....	130	0	130
26 Supplies & Materials.....	45	0	45
31 Equipment.....	95	0	95
Total	2,815	86	2,901

Analysis of Increase

Necessary Pay.....	86
Program Funds.....	0

ABSTRACT - The Office of Design and Construction (ODC) provides professional architectural and engineering services to support the development, operation, maintenance, repair, and improvement of the Smithsonian's physical plant. These support service responsibilities include short- and long-range feasibility analyses, master plans, design and engineering studies, design development, contract document preparation, project management, contract administration, and preparation of cost estimates for budgets and construction. The staff reviews contracts, plans interior design and space renovations, provides technical consulting support, and operates construction field offices.

The Smithsonian is not seeking additional funding for FY 1991 programmatic increases for the Office of Design and Construction. The Institution requires \$86,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - The Office of Design and Construction staff consists of electrical, mechanical, structural, and civil engineers; architects; construction and program managers; planners; estimators; technicians; computer specialists; and administrative support positions. The main function of the Office of Design and Construction is to provide the expertise necessary to plan, design, construct, and administer a program for all construction, repair and restoration projects for Smithsonian buildings, museums, and research facilities. The buildings serviced are primarily in the Washington metropolitan area. Other facilities serviced include the Smithsonian Environmental Research Center in Edgewater, Maryland; the Cooper-Hewitt Museum in New York; the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts; the Whipple Observatory in Arizona; the Smithsonian Tropical Research Institute in Panama and Linkport in Florida.

The ODC staff provides professional and technical support to guarantee a safe and proper environment for visitors, staff, and the National Collections. Through the repair and restoration program, the staff works to preserve, repair, rehabilitate, and correct code violations of an aging physical plant. The staff also provides professional assistance to bureau managers on exhibition construction and space modification projects. These services include:

- providing program management assistance for major museums with construction, renovation, and related needs;
- preparing contract documents including designs, specifications, and cost estimates for construction projects;
- preparing master facility plan studies and related analyses;
- planning for construction and facility development and physical plant utilization;
- developing related budget, construction, and change order estimates for the construction and repair and restoration programs;
- reviewing exhibit designs prepared by museum staffs to ensure compliance with safety, health, and accessibility requirements and compatibility with existing building systems.

The Office maintains an extensive file system of technical specifications and drawings related to facility projects and programs involving all Smithsonian buildings and sites except the National Zoo. This resource supports the current and future work of ODC and other Smithsonian organizations.

Funds committed annually for various facilities and exhibition projects come from construction, repair and restoration, and salaries and expenses appropriations and from Trust funds. Most recent major construction, repair, and restoration projects include:

- construction of the Quadrangle link to the Freer Gallery of Art;

- additions and alterations to the Freer Gallery of Art;
- construction of the Tupper Laboratory and Conference Center at the Smithsonian Tropical Research Institute (STRI);
- major construction at Barro Colorado Island in Panama;
- construction of the Ridge Dormitory at the Whipple Observatory;
- replacement of PCB transformers at all existing locations;
- removal of asbestos from various facilities;
- repairs, including fire protection, disabled access, and health and safety improvements for various buildings and museums.

In addition to current activity, ODC planners and design professionals prepared detailed preliminary facility requirements data and planned projects for future years. Detailed plans were prepared for the Whipple Observatory Base Camp construction and the Tropical Research Institute facility development. Preliminary construction plans and projects include the Silver Hill collections storage facility, the Natural History Building utility systems replacement master plan, the U.S. Custom House planning study for Museum of the American Indian, and the Air and Space Building extension site evaluation study.

During FY 1989, ODC's professional staff administered 155 construction service contracts and 85 architectural and engineering service contracts. In addition, the staff reviewed 67 exhibit installation projects and supervised 55 interior design and space-related projects.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - These funds provide salary and partial support costs as ODC services both Trust and federally funded programs.

OFFICE OF PROTECTION SERVICES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	702	22,261	-	7	1	324	-	-	-	-
FY 1990 -Estimate	764	23,339	-	8	1	140	-	-	-	-
-Base	764	23,853								
FY 1991 Estimate	767	24,437	-	8	1	140	-	-	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	764	3	767
11 Personnel Compensation.....	16,466	467	16,933
12 Personnel Benefits.....	3,294	117	3,411
21 Travel.....	60	0	60
22 Transportation of Things.....	3	0	3
23 Rent, Communications & Utilities.....	30	0	30
24 Printing & Reproduction.....	10	0	10
25 Other Services.....	3,280	0	3,280
26 Supplies & Materials.....	345	0	345
31 Equipment.....	360	0	360
42 Insurance Claims & Indemnities.....	5	0	5
Total	23,853	584	24,437

Analysis of Increase

Necessary Pay.....	584
Program Funds.....	0

ABSTRACT - The Office of Protection Services (OPS) protects the visitors, staff, collections, and facilities of the Smithsonian Institution by providing guard, physical security, and medical services. The authority of OPS to provide these services derives from Public Law 82-206 and Public Law 88-391, both regarding the policing of Smithsonian buildings and grounds, and from Public Law 91-616, which relates to employee health. The Institution requires \$584,000 for Necessary Pay for existing staff funded in this line-item.

PROGRAM - OPS is a support organization responsible for protecting the collections, facilities, and other property of the Smithsonian from damage, destruction, or loss from any cause and for creating and maintaining a safe environment for visitors and staff. This broad mission includes a responsibility to:

- determine the protection requirements of Smithsonian facilities and to meet these requirements by operating a guard force;
- procure, install, and maintain an alarm network and to respond to its signals;
- install and maintain locks and other security hardware in Smithsonian facilities;
- investigate activity involving the physical security of property;
- plan and provide health services for employees;
- take appropriate action to eliminate health hazards from the work place;
- provide emergency medical treatment for the injuries and sudden illnesses of visitors and staff.

OPS provides security management, guard, investigative, and occupational medical services for the major Smithsonian facilities in Washington, D.C., including 14 museums and art galleries, and to the Cooper-Hewitt Museum in New York City. OPS offers technical assistance and advisory services in security matters to all Smithsonian bureaus. To accomplish its mission, OPS employs a force of security officers and a staff of administrators, training specialists, alarm systems specialists and technicians, investigators, museum security specialists, a medical officer, nurses, emergency medical technicians, and an employee assistance counselor.

The security force operates 24 hours a day, every day of the year, to patrol and provide access control at major facilities in or near Washington, D.C., and at the Cooper-Hewitt Museum in New York City. Uniformed guards, plainclothes officers, and K-9 (canine) officers patrol galleries and the grounds around Smithsonian buildings day and night. They respond to emergencies; operate and respond to the signals of an alarm network that covers all Smithsonian facilities, including the National Zoological Park and the Smithsonian Mail Order Center in Springfield, Virginia; conduct security and fire patrols after the museum buildings close to the public; investigate accidents; report fire and safety hazards and malfunctions associated with mechanical and electrical equipment; and provide information to museum visitors. The Office coordinates protection arrangements, especially those related to VIP visits and exhibitions of international interest, in cooperation with the State Department, the Secret Service, the U.S. Park Police, and other Federal and local agencies. In recent years, OPS has concentrated on reducing the number of thefts committed in Smithsonian facilities. Plainclothes officers patrol areas with high crime rates, and OPS intensively trains its officers in police methods and security practices. OPS thoroughly investigates reported incidents, which have begun to decline in recent years (FY 1984, 179; FY 1985, 204; FY 1986, 263; FY 1987, 327; and decreased to 279 in FY 1988 and 242 in FY 1989).

The training of museum security officers is a specialized area in which OPS takes pride and which has gained renown in the museum community. Training staff instructs

all new guards (including K-9), prepares guards for higher-level officer positions, and conducts refresher courses for the force. OPS also trains guards from other agencies and museums. Over the past several years, the staff has trained K-9 teams from Fairfax and Loudoun Counties and Falls Church, Virginia; Kanawha County, West Virginia; and the Annapolis, Maryland, Police Department, as well as guards and guard supervisors from Detroit Institute of Arts; the Museum of New Mexico, Santa Fe; the Virginia Museum of Fine Arts, Richmond; the U.S. Air Force Museum, Wright-Patterson Air Force Base, Ohio; the Amon Carter Museum of Art, Fort Worth, Texas; the High Museum of Art, Atlanta, Georgia; the National Aquarium, Baltimore, Maryland; the Bishop Museum, Honolulu, Hawaii; and other agencies across the United States. OPS assists the Institution's Office of Museum Programs in providing security training for small museums throughout the country. Every year OPS hosts a large museum security conference that has attracted international participants. Through all these activities, OPS plays a leading role in improving the security of cultural objects.

An expansive network of locks, alarms, and other devices is necessary to control access to and provide protection for Smithsonian facilities and property. OPS advises curators and exhibitors on appropriate security systems and plans, designs, acquires, installs, and maintains security systems in Smithsonian facilities in the Washington metropolitan area. In addition, OPS provides advice on security systems for facility, exhibit, and collections protection to Smithsonian organizations outside the Washington metropolitan area and to other museums, libraries, churches, historic sites, and corporations.

OPS developed the Proprietary Security System (SIPSS) to provide complete internal control of the equipment used in and the information provided by its security systems, to improve the timeliness of OPS response to the signals received from its alarms, and to control the costs associated with operating a security system. All Washington-area facilities have SIPSS. Changing field wiring and devices from leased telephone lines to Smithsonian-owned lines and devices will continue through 1991.

OPS conducts and arranges for security management surveys to determine protection requirements of Smithsonian facilities, investigates alleged and actual violations of the law occurring on Smithsonian premises, and escorts shipments of valuable objects to and from the Smithsonian. The investigative program resolves collections losses, thefts, and other serious internal matters. Successful resolution of collections losses and thefts requires coordination with the United States Attorney, the Department of Justice, and the court system.

OPS provides occupational medical services and counseling for Smithsonian employees and emergency first aid for employees and visitors. The medical officer, occupational health nurses, employee assistance counselor, and emergency medical technicians assist in identifying and eliminating hazardous work environments, monitor the health of employees exposed to occupational hazards, and provide first aid for on-the-job injuries of employees. Major program elements include general protection and monitoring of employees exposed to various specific hazards (e.g., asbestos, loud noise, pesticides, and other toxic chemicals); medical evaluation of individuals selected for certain hazardous jobs or for certain job duties or functions (e.g., underwater diving evaluations [92 through June 30, 1989]); employee counseling to deal with substance abuse and emotional problems (482); routine medical treatments (e.g., allergy shots [900], flu shots [561], and dressing changes) requested by an employee's private physician to reduce the amount of work time employees miss for simple health care; required immunizations for Smithsonian employees on official travel (393); health education, major disease-screening programs, CPR training (307 employees), and

first aid training (128 employees). OPS provides these occupational medical services at the Washington-area facilities and at major remote facilities as well. There were 17,372 visits to Smithsonian health units in FY 1989. This figure includes services performed by health staff during visits to the remote facilities.

The occupational medicine program has expanded rapidly since April 1983, when OPS appointed its first full-time medical officer. Occupational health units operate in the National Museum of American History, the National Museum of Natural History, the National Air and Space Museum, the National Zoological Park, the Museum Support Center, and the Hirshhorn Museum and Sculpture Garden, and health services are available in other facilities during regular visits by health staff members. The program formerly suffered from a staffing shortage of occupational health nurses, but the introduction of higher pay rates in FY 1989 has alleviated the problem. A similar shortage of emergency medical technicians remains a problem for OPS. To accommodate the increasing number of Smithsonian employees identified as being at risk from exposure to hazardous materials. OPS has acquired new equipment and developed a new examination program for exposure to asbestos (535 examinations) and other toxic substances (127) and animal parasites (30). OPS gave audiometric examinations to employees requiring a hearing conservation program (344) and provided hearing protection devices. In FY 1989, OPS health personnel completed 5,219 screening examinations.

According to Executive order and mandates from OPM and OSHA, OPS will continue to develop its current occupational health programs. These programs need additional funding and space to be administered efficiently, but OPS will use existing base resources in the interim to accommodate these federally-mandated programs. OPS will be able to undertake additional required programs when the resources needed to administer these programs becomes available. OPS foresees a rapidly-escalating demand for employee counseling, monitoring of employees exposed to toxic chemicals, health-screening tests, and pre-employment physicals. OPS also would like to promote all types of voluntary screening programs to increase employee participation in its health programs, because greater participation by Smithsonian employees will result in greater savings and efficiencies in human resources for the entire Institution.

In discharging its responsibilities to ensure diving safety, OPS holds meetings with Smithsonian divers to explain the medical standards consistent with those of the American Academy of Underwater Sciences, Undersea and Hyperbaric Medical Society, and the National Oceanic and Atmospheric Administration. OPS reviews medical qualifications of those planning to dive, performs physical examinations of divers, represents the Smithsonian on appropriate committees of national diving organizations, especially with regard to scientific diving, and provides liaison on medical aspects of scientific diving with Federal agencies, legislative committees, and scientific societies. The medical officer regularly visits Smithsonian research sites to observe and evaluate health hazards for divers.

OPS has expanded its counseling program for employees with alcohol, drug abuse, or emotional problems that affect work performance, bringing the Institution into full compliance with the requirements of Public Law 91-616. The certified counseling staff is available to employees on a full-time basis. The number of referrals is increasing dramatically as the Employee Assistance Program (EAP) becomes publicized more widely to employees and supervisors. There were 482 EAP visits in FY 1989.

An outside contractor is updating the employee medical records system and will complete the extensive computerization in FY 1990. In addition, OPS is now conducting

stringent inspections of all Smithsonian and National Zoological Park food service facilities and requires testing all food handlers for tuberculosis.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - The use of guard services at after hour special events and lectures at Smithsonian facilities provides allotments and reimbursements. These funds purchase supplies, materials, and equipment.

OFFICE OF PLANT SERVICES

(Dollars in Thousands)

Fiscal Year	APPLICATION OF FUNDS									
	FEDERAL FUNDS		UNRESTRICTED FUNDS				RESTRICTED FUNDS		GOV'T GRANTS & CONTRACTS	
			General		Special					
	FTE*	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount	FTP**	Amount
FY 1989 Actual	472	37,054	6	726	3	281	-	-	-	-
FY 1990 -Estimate	493	37,692	6	1,214	3	393	-	3	-	-
-Base	493	38,108								
FY 1991 Estimate	493	42,996	6	1,235	3	403	-	2	-	-

* FTE = Full-time equivalent

**FTP = Full-time permanent

Detail of Federal Funding

	Base FY 1990	Proposed Adjustments	Est. FY 1991
FTE Allocation.....	493	0	493
11 Personnel Compensation.....	13,083	331	13,414
12 Personnel Benefits.....	2,450	79	2,529
21 Travel.....	25	0	25
22 Transportation of Things.....	1	0	1
23 Rent, Communications & Utilities.....	18,835	4,478	23,313
24 Printing & Reproduction.....	3	0	3
25 Other Services.....	1,151	0	1,151
26 Supplies & Materials.....	2,286	0	2,286
31 Equipment.....	272	0	272
42 Insurance Claims & Indemnities.....	2	0	2
Total	38,108	4,888	42,996

Analysis of Increase

Necessary Pay.....	410
Utilities.....	4,213
Rent.....	265

ABSTRACT - The Office of Plant Services (OPlantS) operates, maintains, and repairs 14 museums and art gallery buildings and many other work and collection storage areas located in the Washington metropolitan area and New York City. In support of research, exhibitions, education, and other public programs, OPlantS provides utilities, transportation, mail services, exhibits renovation, and other program services. OPlantS also provides technical service and assistance to several

Smithsonian units located outside the Washington metropolitan area, including the Smithsonian Tropical Research Institute in Panama, the Fred Lawrence Whipple Observatory in Arizona, and the Smithsonian Environmental Research Center in Edgewater, Maryland.

The Office of Horticulture, South Group Facilities Management, and Quadrangle Facility Management are also part of this line-item. The Office of Horticulture manages the Smithsonian grounds and provides horticultural assistance to Smithsonian bureaus. A greenhouse-nursery supports the horticultural needs of the Smithsonian. South Group Facilities Management offers a full range of maintenance services for the Arts and Industries Building and Smithsonian Institution Building. Quadrangle Facility Management offers a variety of administrative and maintenance support services for the Arthur M. Sackler Gallery, the National Museum of African Art, and the S. Dillon Ripley Center, located in the Quadrangle Complex.

The Institution requires \$410,000 for necessary pay for existing staff funded in this line-item. An increase of \$4,478,000 justified in the Uncontrollable Increases section of this budget will support the Institution's utilities and rent, including D.C. water and sewer charges.

PROGRAM - I. Office of Plant Services: With base funding of 362 workyears and \$14,840,000, the Office of Plant Services operates, maintains, and repairs more than five million net usable square feet in museums and art galleries in Washington, D.C., and New York City. The Office provides maintenance of building interiors and exteriors; elevators, escalators, mechanical, and electrical equipment; and lighting and refrigeration components, as well as oversight of emergency property repairs accomplished by service contracts. Trade and craft support includes plumbing, electrical, woodcrafting, and plastering efforts. In addition to furthering research projects and office relocations and modifications, OPlantS provides these services to support exhibition installations and public events throughout all Smithsonian facilities.

The Office's automated Facility Monitoring System continually analyzes and controls mechanical equipment throughout the Institution. This system monitors areas of buildings requiring stable humidity and temperature control and alerts a control center when deviations occur. Because this automated system identifies abnormalities so quickly, immediate adjustments allow the Smithsonian to avoid costly repairs and prevent damage to the National Collections. The automated Preventive Maintenance System ensures increased reliability, decreased repair costs, and longer life by scheduling regular preventive maintenance on building operating systems. This system schedules preventive maintenance for fire prevention systems, guard stations, and automatic lighting, as well as roofing systems and heating, ventilating, and air conditioning systems in all museums and the Smithsonian Environmental Research Center (SERC).

The Office maintains and operates a supply warehouse to stock and distribute frequently used supplies and materials. To obtain the best prices, OPlantS purchases materials in bulk and stores them for future distribution. In addition to supporting office relocations and modifications, OPlantS offers packing, crating, warehousing, and moving services for museum objects and collections. The Office also provides a full range of transportation services for the Institution, as well as mail services and postage monitoring.

In FY 1989, OPlantS continued providing program support to museums and other Smithsonian organizations. This support included preparing halls for new exhibitions, renovating office space to accommodate changing program needs, and continuing the installation of automated exhibit lighting systems. The building inspection program continued, ensuring identification and disposition of facility repair needs by OPlantS personnel.

Significant accomplishments in FY 1989 included providing trade and craft services such as electrical, plumbing, woodcrafting, and painting in support of more than 90 exhibits projects. Notable among these exhibits were "Crossroads of Continents" at the National Museum of Natural History; "Caribbean Festival Arts" at the International Gallery in the Quadrangle Complex; "Beyond the Limits: Flight Enters the Computer Age" at the National Air and Space Museum; "Ceremonial Court" at the National Museum of American History; and "Gerhard Richter" at the Hirshhorn Museum and Sculpture Garden.

Other significant OPlantS accomplishments were installing playground equipment for the Smithsonian Early Enrichment Center, completing construction of the new Mathias Laboratory at SERC, providing assistance to the Inaugural Committee for the Inaugural Ball and other activities held at Smithsonian facilities, and receiving an award from the Potomac Electric Power Company in recognition of outstanding contributions in support of the annual electrical Load Curtailment Program.

II. Office of Horticulture: With base funding of 46 workyears and \$1,758,000, the Office of Horticulture (OH) applies the discipline of horticulture in educational, scientific, research, exhibition, and display activities throughout the Smithsonian. OH manages the grounds and gardens surrounding 14 museums and support facilities on the Mall and elsewhere in the Washington metropolitan area to ensure healthy, safe, and attractive landscaped areas. The Office also manages the Mary Livingston Ripley and Enid A. Haupt Gardens, which provide a respite to visitors and serve as horticultural educational exhibitions.

OH manages landscaped areas. Staff responsibilities include turf management, tree and shrub feeding, disease and insect control, condition monitoring, and the watering of hundreds of trees, shrubs, and innumerable flowers in exhibition gardens and landscaped areas. More than 100,000 plants and artifacts are under OH's management, including garden furniture and plants grown at the Smithsonian greenhouse-nursery complex at the U.S. Soldiers' and Airman's Home that are used in Smithsonian museum interior and exterior displays. OH units extensively use resources within the Horticulture Branch Library to support these programs. Removal of ice, snow, and trash from the gardens is also the responsibility of the Office.

In FY 1989, the Office continued work to improve the soil in the Enid A. Haupt Garden (EAHG). OH lightened the compacted soil by using organic amendments and introducing 20,000 earthworms and earthworm casings. Seasonal plantings in EAHG provide continual enjoyment to visitors. Review of walkways improvements for wheelchair access continues. The 100-year-old European linden tree, a focal point in the garden, was blown over during a windstorm. Five linden trees planted in a semicircle around the Downing Urn replaced it.

OH continued to work with the Office of Product Development and Licensing (OPDL) on reproduction and marketing of OH Artifact Collection items. OPDL contracted with Garden Source, a garden furnishings manufacturer, to produce two small 19th-century

urns and a 19th-century flower stand, also being offered as a fountain. OH also worked with OPDL on a jigsaw puzzle made from images of seed packet covers.

In FY 1989, the Office of Horticulture provided significant numbers of plants used in exhibition projects within the various Smithsonian museums. Among these exhibitions were "Flowers from the Royal Gardens of Kew" at the National Museum of Natural History and "Caribbean Festival Arts." During the year, seven changing exhibitions in the north foyer of the National Museum of Natural History were installed. These included tropical plants, ivies, ferns, bromeliads, ornamental grasses, poinsettias, and cymbidiums. OH distributed fact sheets with cultural requirements and bibliographies at each exhibition. OH provided special plants for the Hawaiian display at the Festival of American Folklife. OH placed first in the Institutional Class of the National Capitol Orchid Society exhibition for the "Best Exhibit" in the show.

During December 1989, OH mounted the 13th annual "Trees of Christmas" exhibition in the National Museum of American History. OH staff displayed thousands of hand-crafted ornaments on twelve trees, each portraying a different theme and craft. Volunteers from throughout the United States made ornaments from natural and manufactured materials, then donated them to the Institution at the conclusion of the exhibition.

III. South Group Facilities Management: With base funding of 41 workyears and \$1,167,000, South Group Facilities Management responds to the needs of the two oldest and most historic buildings of the Smithsonian: the Arts and Industries Building and the Smithsonian Institution Building, known as the Castle. The staff is responsible for cleaning, minor maintenance, labor services to include intrabuilding office moves, lamping, craft services, shipping and receiving, and special events. The Office also contracts for and coordinates maintenance, trash removal, pest control, and renovation projects.

IV. Quadrangle Facility Management: With base funding of 44 workyears and \$1,051,000, Quadrangle Facility Management provides a wide variety of support services to the Education Center of the S. Dillon Ripley Center, Museum of African Art, Arthur M. Sackler Gallery, Resident Associate Program, National Associate Program, Smithsonian Institution Traveling Exhibition Service, and the International Center. These services include space-scheduling and custodial, labor, rigging, minor maintenance, lamping, shipping and receiving, and other services. The automated scheduling and maintenance program greatly enhances the reliability and effectiveness of housekeeping, public events, and related support services.

NONAPPROPRIATED SOURCES OF FUNDING:

Unrestricted General and Special Purpose Funds - Allotments provide unrestricted Trust funds to cover salaries and support costs in the Office of Plant Services. These allotments also provide the Trust-fund share of space rental costs for administrative activities located at L'Enfant Plaza. Reimbursements from Trust-funded client organizations provide special purpose funds for support services offered by OPlantS. These funds purchase supplies, services, equipment, and landscaping materials.

CONSTRUCTION AND IMPROVEMENTS
NATIONAL ZOOLOGICAL PARK

1989 Appropriation.....	\$5,305,000
1990 Appropriation.....	\$6,500,000
PL 99-177 & PL 100-119 (Balanced Budget and Emergency Deficit Control Act of 1985 and 1987 Amendments).....	\$6,423,000
1991 Estimate.....	\$6,671,000

Appropriations to this account provide funding for:

- repairs, alterations, and improvements to plant property;
- additions to existing facilities and minor new facilities, including exhibits;
- plans and specifications for construction;
- renovation, restoration, and construction of new facilities outlined in the Master Plan initially approved in FY 1973 by the Fine Arts and the National Capital Planning Commission and approved after revision in 1986.

The Zoo contracts for most construction and improvement projects. If the contractor's estimates are above acceptable cost levels, a more economical alternative is to hire permanent or temporary labor to accomplish the work. The account also funds related expenses such as relocation of animals during the renovation or construction of facilities and major grounds maintenance resulting from storm damage.

In keeping with the 1889 charter, the National Zoological Park endeavors to "administer and improve" the Zoo for "the advancement of science and instruction and recreation of the people" (20 U.S.C. 81). The National Zoological Park (NZP) complex includes 163 acres in the Rock Creek Valley of Washington, D.C., and a 3,150 acre Conservation and Research Center (CRC) located in Front Royal, Virginia. Since 1890, exhibition and public educational functions have been centered in the Rock Creek Valley portion of the National Zoological Park. Conservation, research, and breeding functions take place at both Rock Creek and the Conservation and Research Center at Front Royal. Since 1975, CRC has assumed primary responsibility for saving threatened and endangered animal species.

ROCK CREEK MASTER PLAN - The National Zoo's Rock Creek facilities undergo major renovations and improvements through implementation of the Master Plan. The Congress has appropriated a total of \$53,330,000 over the period FY 1974 - FY 1989 to carry out major portions of the Master Plan. Full implementation of the Master Plan, as revised in 1986, will place the National Zoological Park among the world's finest zoos.

Smithsonian Tropical Science and Global Environmental Science Gallery - Phase I (\$3,000,000) - As an extension of the Amazonia Exhibit, the Zoo proposes to construct (over a two-year period) the Smithsonian Tropical Science and Global Environmental Science Gallery to educate and inform visitors about tropical biology and global problems. This 8,000-square-foot space will consist of 6,000 square feet of exhibit space and 2,000 square feet of support and office space. The Zoo will construct the exhibit area as flexible-use gallery space. The Zoo will seek an additional \$1,700,000 in FY 1992 for the final phase.

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This expanded component of the Zoo's Amazonia Exhibit will showcase the complexity of interactions among plants and animals. The Gallery will spotlight the exquisite nature of the little things that make the tropical ecology work. Exhibits will provide closeup views of the complex web of partnerships and competition that exist among plants and animals. In the Gallery, visitors will explore the myriad of specialized adaptations and relationships that the rich tropical environment nurtures.

The Gallery will also serve to inform visitors of the global environmental effect of the destruction of tropical rain forests. NZP will use the Gallery to explore topics such as the greenhouse effect, global warming, and satellite monitoring. In the area of conservation, the Gallery will emphasize creative alternatives to forest destruction and the rising commitment to preserve these priceless natural riches. The Gallery will address such subjects as how indigenous people use and live with the forest, the forces threatening the forest, the impact of destruction, initiatives for responsible development, and suggestions for what each person can do to save the rain forests.

The Smithsonian Tropical Science and Global Environmental Science Gallery will be a major step forward in zoo exhibitory, setting an example of how new techniques of information transfer apply to a zoo setting. Visitors will learn a new way of looking at nature and will leave with a heightened sense of appreciation for the remarkable tropical ecosystem and the need to conserve it.

Hall of Humankind Design (\$300,000) - To enhance its animal husbandry standards, the Zoo has made remodeling the Monkey House, constructed in 1906, a priority. Accordingly, the Zoo is requesting design funds for a Hall of Humankind to replace the outdated concept of a monkey house. The new facility will treat the biology of the primates in an innovative manner by looking at human origins, biology, and cultural achievements in this context. Paralleling and complementing exhibits on human origins in the National Museum of Natural History, the Zoo's exhibit will use living animals such as tool-using capuchin monkeys, language- and drawing-capable apes, orb-weaving spiders, leaf-cutting ants, and honeybees as analogues of the social, technological, agricultural, communicative, and artistic accomplishments of humans.

The actual construction of this new facility will start in FY 1992, at an estimated cost of \$3,000,000.

CONSERVATION AND RESEARCH CENTER DEVELOPMENT PLAN - The construction strategy at the Conservation and Research Center is to develop an infrastructure that will serve equally well any of the major functional paths that the Center may follow in the next 20 years. All projects conform to the Center's Development Plan.

Water Systems and Hydrants (\$600,000) and Road Improvements and Extensions (\$100,000) - CRC's 70-year-old water distribution system has deteriorated from corrosion and needs extensive upgrading to eliminate the currently inefficient double-direction water main, persistent leaks, and rusty water. All ancient fire hydrants will also be replaced and suitably relocated in order to improve fire protection. The Center's 20-year-old road system has deteriorated as a result of overuse and annual freeze-thaw cycles. Because many of the water mains needing replacement are located under the existing roads, the Zoo will simultaneously upgrade the water system and road system.

RENOVATION, REPAIR AND IMPROVEMENTS:

Rock Creek (\$1,871,000) - The National Zoological Park is responsible for the repair and preventive maintenance of existing facilities. The Zoo strives to maintain a safe environment for its visiting public and staff, to provide ecologically suitable and comfortable enclosures for the animals, and to maintain buildings in good condition. The funding requested for FY 1991 will help ensure that the Zoo's future preventive maintenance program will not include a large backlog of major repairs.

The Zoo's Rock Creek facilities, on 163 acres, include more than 450,000 square feet of buildings and 160,000 square feet of roofs. Along with the Park's perimeter fence measuring 10,564 linear feet, the Zoo's in-ground utility distribution system includes over 4,600 linear feet of high voltage electrical lines, approximately 4,000 linear feet of medium voltage electrical lines, 16,000 linear feet of water mains, 6,000 linear feet of gas mains, 28,000 linear feet of sewer lines, and 14,000 linear feet of storm drains. The Zoo's preventive maintenance program includes the care of these utility systems to ensure safe operation of the facilities. An extensive system of pedestrian paths and vehicle roadways also requires regular maintenance.

The major projects planned for FY 1991 at the Rock Creek facility include:

- ongoing HVAC repairs;
- roof repairs to animal buildings and support facilities;
- repairs to antelope yards;
- repair and replacement of exhibit rockwork and glass;
- repair and replacement of animal exhibit doors;
- painting of animal exhibit spaces;
- renovation of laboratory and support spaces.

The National Zoological Park requests \$1,871,000 to continue its program of renovation, repair, and preventive maintenance at the Rock Creek facility. Funding at this level will enable the Zoo to provide the required level of maintenance to all buildings.

Conservation and Research Center (\$800,000) - The Conservation and Research Center at Front Royal is a nonpublic facility devoted to the conservation of endangered wildlife through programs in propagation, research, and international training. The 3,150-acre facility includes more than 89 structures ranging from animal shelters to research laboratories and residences. The property has 2 1/2 miles of roads, 20 miles of jeep trails, and more than 30 miles of fences.

Funding in FY 1991 will enable NZP to complete the required maintenance and upkeep of these diverse facilities. Specific projects scheduled for FY 1991 at CRC include:

- roof repairs to several residences and animal barns;

- renovation and repair of hoofed stock sheds at Slate Hill, Rockhill, and Longfield pastures;
- renovations and repairs to Building 17;
- interior renovation of Building 112;
- exterior and interior renovation of Building 142;
- installation of nonslip flooring in Veterinary Hospital quarantine areas;
- grading and repair of selected roads.

The \$800,000 that NZP requests for FY 1991 will extend the Center's preventive maintenance program and help reduce future costly repairs at this important facility.

REPAIR AND RESTORATION OF BUILDINGS

1989 Appropriation.....	\$20,735,000
1990 Appropriation.....	\$26,769,000
PL 99-177 & PL 100-119 (Balanced Budget and Emergency Deficit Control Act of 1985 and 1987 Amendments).....	\$26,468,000
1991 Estimate.....	\$28,656,000

Smithsonian facilities include 14 museums and gallery buildings in Washington, D.C., and New York City and total more than 5.5 million square feet of building space. These museum buildings house research and collections management activities and a wide range of exhibitions in the fields of science, history, technology, and art. The Institution also operates and maintains restoration, storage, aircraft, and spacecraft display facilities in the Museum Support Center at Suitland, Maryland; centers for biological research, conservation, and education in Panama and on the Chesapeake Bay near Edgewater, Maryland; a center for astrophysics in Cambridge, Massachusetts; and the Whipple Observatory on Mt. Hopkins in Arizona. These facilities range in age from new to more than 140 years old, and many appear on the registers of historic landmarks.

The Repair and Restoration of Buildings (R&R) account pays the cost of repairs, corrective measures to meet life safety and health regulations, and replacement or renovation of major building components or equipment. This budget document discusses the repairs and renovations at the National Zoological Park as a separate justification.

The heavy public use of buildings and the demands on building equipment and systems for constant temperature and humidity levels to protect the National Collections exacerbate the natural aging process of building materials. Eventually, even effective preventive maintenance and regular repair programs cannot keep the equipment components of building systems operating. The Institution must overhaul heating, ventilation, and air conditioning (HVAC), and electrical and plumbing systems periodically to replace deteriorated equipment, wires, ducts, and pipes. It must repair the effects of weather on the exterior of buildings and guard against interior damage. In addition, the enactment of new codes and regulations calls for building modifications to ensure a safe and healthful environment for visitors and staff.

In past years, funding levels for maintenance, repair, and preservation of buildings have not kept pace with the rate of deterioration. A substantial backlog of essential repair work exists. These repairs are vital to ensure continued functionality of building equipment and systems, long-term preservation of the buildings, or compliance with life safety and health codes and standards. The most recent (January 1990) estimate of the backlog of projects is \$229 million. This reflects a marked increase over prior year backlog totals. Further inspection has uncovered additional requirements or more extensive damage and deterioration. More detailed studies have also recommended higher cost estimates. Only sustained major funding increases will reduce this backlog and preserve buildings for continued use by future generations. Annual funding at the "current services" level in the Repair and Restoration of Buildings program is not sufficient to support the work required. Some of the work is, in fact, more urgent today because inadequate funding in the past prevented the timely repair or replacement of building systems and components.

The Smithsonian separates projects under the R&R program into two categories and accordingly requests funding in two subaccounts. The first subaccount, Major Capital

Renewal, includes funds for the cyclical replacement of major building systems and equipment and major renovation projects required to assure long-term preservation of the buildings. These projects are different in magnitude, expense, and planning complexity from the more routine ongoing restoration work, preventive maintenance projects, or repairs undertaken when a piece of equipment fails. More than half the identified backlog consists of these major replacement requirements for HVAC and electrical systems at the Natural History, American History, Smithsonian Institution, Arts and Industries, and American Art and Portrait Gallery buildings.

The second R&R subaccount is Repairs, Restoration, and Code Compliance. Funding requested through this subaccount will eliminate, over a period of time, the remainder of the backlog of repairs and other work needed to meet safety and health requirements. This subaccount encompasses six categories of routine maintenance and repair projects. This budget request presents an aggregate amount for each of the six categories, with a description of the kinds of work planned.

The composition of the FY 1991 R&R budget request follows:

<u>REPAIR AND RESTORATION OF BUILDINGS</u>	
MAJOR CAPITAL RENEWAL	\$13,930,000
REPAIRS, RESTORATION, AND CODE COMPLIANCE	
General Repairs	3,935,000
Facade, Roof, and Terrace Repairs	3,790,000
Access, Safety, and Security Projects	2,725,000
Fire Detection and Suppression Projects	925,000
Utility Systems Repairs	2,051,000
Advanced Planning and Inspection	<u>1,300,000</u>
Subtotal	\$14,726,000
TOTAL REQUEST	\$28,656,000

Following the narrative description of the program for FY 1991, a listing shows all planned projects by building and R&R category.

MAJOR CAPITAL RENEWAL:

Projects in this category involve replacing major building systems and components that have outlived their useful lives. Complete replacement ensures long-term operation and preservation of the building. Modifications to the building also improve energy efficiency, meet fire detection and suppression requirements, and correct hazardous conditions. By coordinating these kinds of tasks, the Institution saves money and avoids repeated disruption to activities in the building. The Smithsonian achieves operating efficiencies as well by designing new building systems and components to work together. For example, by installing multiple-paned windows and increasing insulation, the Smithsonian can install heating and cooling equipment with lower capacity. The equipment costs less to purchase and install, and long-term operating costs are lower. The impact of renovation work on programmatic activities is a key factor in planning a major project. The overhaul of a building causes serious disruption to activities in the building. The Institution must relocate staff and collections from the areas under construction to prevent damage and to allow staff to continue working during the construction period.

For FY 1991, the Smithsonian requests \$13,930,000 for the projects listed below:

American History Building (\$3,790,000) - A 1982 study of the HVAC system of the 25-year-old American History Building recommended replacement of the deteriorated heating, ventilation, air conditioning, and refrigeration equipment systems and controls. Replacement of these systems will ensure the continued provision of required environmental conditions in an energy efficient manner. The study also recommended modifications to the building envelope to increase energy efficiency. The Institution recently completed the required window and roof replacement and facade repairs using previously provided funding.

The 1986 Master Coordination Plan established a detailed schedule for replacing the HVAC and related systems. This plan also incorporated anticipated life safety and fire protection improvements and asbestos removal work so that workmen could isolate vertical portions of the building and accomplish all work required in each segment at the same time. This scheduling of complex but interrelated projects will result in less disruption to the Museum's activities and save money through a single contract for each vertical portion. The final phases of the project will incorporate all work required in the office areas of the fourth and fifth floors and in the basement of the building.

Work in each vertical quadrant includes replacing the mixing boxes, controls, and air-handling equipment; installing new sprinkler and smoke detection systems, constructing new fire walls and other fire protection improvements originally outlined in the Fire Protection Master Plan; and removing asbestos present in mechanical rooms and other areas of the building. The Museum is coordinating this project with its exhibit renewal program. The project includes the cost of relocating artifacts and personnel displaced in the course of the work.

The first phase of this project began with funding received in FY 1987 (\$1.2 million) and FY 1988 (\$1.6 million) and includes all work required in the east quadrant of the building. Funding received in FY 1989 (\$2.1 million) will cover Phase II, the west central quadrant. The Institution will use the \$3,675,000 appropriated for FY 1990 for Phase III in the west quadrant and design costs for the next phase of work. Of the \$3,790,000 requested for FY 1991, funds will support Phase IVa construction in the east central quadrant (\$3,300,000); design of the final phase of work which will include construction on the fourth and fifth floors (\$290,000); and relocation of staff and collections displaced by the work in progress (\$200,000).

Natural History Building (\$10,140,000) - Over the past several years the Institution undertook a number of separate studies of the Natural History Building to address energy conservation, fire detection and suppression, communications, security upgrading, asbestos abatement, and other remedies to building deficiencies, especially in the HVAC and electrical systems. As a result of these studies, the Institution realized the magnitude of the work required and initiated a Master Implementation Plan to ensure that the Natural History Building is maintained in an effective manner. The Institution will schedule work in a way to minimize disruption within the building and to reduce costs by grouping tasks. The Museum will coordinate the exhibit reinstallation program with the renovation project. The Institution proposes to fill in the East Court space with a new building to provide permanent space for expansion of the Museum's current activities. The Museum will use this new building during the renovation project as staging space, to allow relocation of staff and collections affected by the renovation work to a safe space while work is in progress. Construction of this building will require relocation of the current chiller plant to

a new vault under the parking lot as well as accommodation for other functions now in the East Court space. The Construction section of the budget request includes a justification for the East Court Building.

Guided by a Fire Protection Master Plan developed in 1979, fire protection improvements and asbestos removal and containment work are well under way. However, the replacement of the HVAC and critical electrical equipment is the more significant aspect of this project, and thus governs the overall work schedule. The majority of the HVAC equipment is now more than 25 years old and requires replacement to avoid system failure. The automatic temperature control system is obsolete and does not operate satisfactorily. The age of 90 percent of the electrical lighting and power panels in the building is in excess of 20 years. Some of the electrical panels date from 1910 and present a potential safety hazard. Other panels installed in the 1960s are not UL (Underwriters' Laboratory) approved as meeting established safety standards, and replacement circuit breakers are no longer available. The main high-voltage switchgear equipment, which serves all the transformers for the Natural History, Freer Gallery, Arts and Industries, and Smithsonian Institution buildings, is approximately 40 years old. The Smithsonian must completely replace these components and other related electrical equipment because repair parts are no longer available.

The Institution completed a detailed plan for the replacement of building systems at the Natural History Building in the fall of 1989. The plan spreads the work over a number of years to provide the most cost effective construction sequence, minimize disruption of programs, and obviate Museum closings. The scope of work includes:

- replacing the HVAC system with a new centralized system located in new penthouses over the east and west wings;
- replacing the chiller plant with updated equipment in a new vault beneath the southeast corner of the parking lot;
- modifying the building envelope, specifically by installing roof insulation, replacing single-glazed windows with triple-glazed windows, replacing roof rain leaders, and installing air locks or vestibules at entrances and loading docks;
- centralizing laboratories with new exhaust air systems;
- improving the automatic temperature control system;
- connecting the equipment to a central control and monitoring system.

The project will incorporate remaining fire protection work originally conceived under the Master Plan. Work will also include removing or encapsulating asbestos insulation located in the attics and attached to equipment, ductwork, and piping throughout the building.

Funds appropriated in FY 1986 (\$235,000) supported the Master Implementation Plan and the evaluation of the potential requirements for interim measures to keep the facility operational through the construction period. With amounts of \$100,000 and \$475,000 received in FY 1987 and FY 1988, respectively, the Institution completed planning for the renovation project and began assessing requirements for the relocation of staff and collections affected by the construction. The plan includes a detailed schedule and cost estimate on which to base future budget requests. The

Institution will use the \$1,000,000 and \$9,950,000 appropriated in FY 1989 and FY 1990, respectively, for design and construction of the new underground chiller plant; predesign work for the entire renovation project; and detailed design of the penthouses over the east and west wings, and the roof, attic, and window work.

For FY 1991, the Institution requests \$10,140,000 for the construction of the penthouses and for emergency replacement of electrical and HVAC equipment not expected to remain operative throughout the construction period (\$9,150,000); preparation of design and specification documents for the next phase of construction (\$540,000); and relocation of staff and collections (\$450,000).

REPAIRS, RESTORATION, AND CODE COMPLIANCE:

Projects in this category include:

- minor, unscheduled, but essential repairs to sidewalks, roads, parking lots, waterproofing, electrical and lighting systems, plaster walls, and marble floors;
- repairs to facades, roofs, terraces, and window frames;
- improvements to assure access for the disabled; asbestos abatement, renovations to elevators, correction of exhaust problems, construction of chemical and hazardous material storage facilities, installation of emergency electrical generator system; and installation of security devices and lighting;
- installation of heat and smoke detection systems, sprinkler and chemical suppression systems, fire doors and fire rated walls, and lightning protection and exit capability improvements;
- repairs and energy conservation improvements to HVAC plumbing, electrical, and communications systems;
- inspection and advanced design of future-year projects and long-range planning for repair and restoration of Smithsonian facilities.

For FY 1991, the Smithsonian requests \$14,726,000 for the projects listed below:

General Repairs (\$3,935,000) - Funds requested in this category support a wide variety of projects. These funds provide resources for minor, unscheduled, but essential repairs that the Institution cannot anticipate specifically or do not fit into one discrete category. For FY 1991, the Institution requests \$3,935,000 for such projects as:

- replastering and painting of damaged areas in the Rotunda and exhibit halls in the Arts and Industries Building;
- repairs to the electric snow melting system beneath the east and west ramps to the parking garage at the Air and Space Building;
- replacement of the failing suspended ceiling system on the third floor of the Air and Space Building;

- structural repairs to the Tivoli Administration Building at the Smithsonian Tropical Research Institute;
- repairs to sidewalks, parking lots, and roads at various locations;
- general repairs at off-Mall facilities;
- emergency repairs required throughout the Smithsonian.

In addition, the funds will allow the completion of several projects begun in previous years. These projects include:

- repair and modification of the public rest room facilities at the Air and Space Building;
- design for restoration work on the lower level of the Old Dominion Building and repairs to the water tower at the Smithsonian Environmental Research Center;
- renovation and repair of the Freer Gallery Building to correct electrical and lighting problems and repair or replace badly deteriorated plaster walls and cracked marble floors on the gallery level, and to remove asbestos and repair the HVAC system in the basement;
- repair of waterproofing and leak detection at the American Art and Portrait Gallery Building.

Facade, Roof, and Terrace Repairs (\$3,790,000) - Maintaining the integrity of the exteriors of all Smithsonian buildings is critical. This maintenance will prevent major structural and interior damage and deterioration due to age, water intrusion, and weathering. Proper care will ensure a safe environment for visitors, staff, and collections. In addition, energy conservation demands weather-tight exteriors. Work in this category includes a variety of projects accomplished cyclically and varies with the life of the materials used. For example, roofs need replacing nearly every 20 years; facade joints need recaulking and repointing about every ten years; and window frames and other exterior trim need repainting every five years. Several Smithsonian buildings now require large-scale restoration. The Institution plans to offer additional protection for building exteriors through an enhanced preventive maintenance and repair program.

For FY 1991, the Institution requests \$3,790,000 for facade, roof, and terrace repairs. Planned projects include roof inspection, repair, or replacement at the American Art and Portrait Gallery Building, the Cooper-Hewitt Museum, and the Smithsonian Tropical Research Institute. Work will continue at the Smithsonian Institution Building to restore the windows and the facade stones and to repoint the building's facade masonry. The Institution will complete the resurfacing of the deteriorated plaza at the Hirshhorn Building and correct a water intrusion problem caused by penetration through the inner court window wall sills. Other projects funded from this subaccount include:

- repairing, restoring, and painting the historic iron fence at the Cooper-Hewitt Museum;

- repairing the waterproofing membrane beneath the terrace at the American History Building;
- repairing and painting wooden and metal facades and building elements at a variety of locations.

Access, Safety, and Security Projects (\$2,725,000) - The Institution continues to emphasize providing better access for disabled persons, improving environmental conditions for the health and safety of visitors and staff, and correcting facility conditions that threaten the security of the National Collections.

For FY 1991, the Institution requests \$2,725,000 for a number of important projects in these areas. Projects to improve access for disabled persons in order to meet current code requirements include:

- modifying the entrances to the Arts and Industries and Smithsonian Institution Buildings to ensure full access by the disabled, elderly, and visually impaired;
- modifying and modernizing rest rooms in the Smithsonian Institution Building for handicapped access and more flexible use by female employees and visitors.

Among the projects planned for correction of hazardous conditions are:

- continuing the asbestos abatement program;
- renovating elevators at the Natural History Building to ensure safe operation;
- constructing storage facilities for chemicals, fuel, and other hazardous materials at several locations at the Smithsonian Tropical Research Institute.

Other safety-related projects that will continue include correcting the fume hood exhaust deficiencies at the Museum Support Center and installing emergency electrical generator systems at several facilities.

Projects for FY 1991 to improve security of the collections, staff, and visitors include:

- completing installation of internal barriers and monitoring equipment in the Numismatics vault at the American History Building;
- installing elevator monitor panels at the Air and Space Building;
- completing the security system at the Freer Gallery Building;
- improving illumination around buildings and in parking lots on the Mall and at the Anacostia Building for more effective surveillance.

Fire Detection and Suppression Projects (\$925,000) - A major Institutional priority is to provide the best fire protection and safety measures available under today's standards and with state-of-the-art technology. Every major Smithsonian

facility has a fire protection master plan. For FY 1991, the request of \$925,000 will continue fire protection master plan work in the Natural History, American History, Air and Space, American Art and Portrait Gallery, Cooper-Hewitt and Hirshhorn buildings. Work will include the installation of heat and smoke detection systems, sprinkler and chemical suppression systems, and fire doors and walls and the improvement of exit capability.

Utility Systems Repairs (\$2,051,000) - Funds in this category will maintain, repair, and upgrade the heating, ventilating, and air conditioning systems, and plumbing, electrical, and communications systems throughout the Institution's facilities. Ongoing renovations, repairs, and replacements of deteriorated equipment components are essential for ensuring continued energy efficient operation of utility systems. The long-term preservation of the National Collections is dependent upon stable temperature and humidity conditions.

Energy conservation remains a high priority at the Smithsonian. The most significant energy savings will result from upgrading HVAC systems, replacing obsolete equipment, and improving the efficiency of environmental zones. The Institution modifies existing HVAC systems to accommodate programmatic growth, changes in the use of buildings, and the environmental needs of collections as they become better understood. The Institution uses an integrated approach to renovations and modifications to plan for long-range, systematic HVAC improvements that will meet museum environmental requirements in an energy efficient manner.

Comprehensive HVAC studies and energy audits for most of the buildings facilitate planning of other improvements. The scope of HVAC studies includes field investigations of age, condition, and performance of existing equipment, controls, and current operating conditions; reviews of existing drawings, specifications, operating manuals, and hygrothermograph records; analyses of the relationship between the building structures and HVAC systems; and assessments of programmatic needs for environmental control. The data gathered by these studies provide a basis for determining redesign or replacement needs of existing HVAC systems; developing construction cost estimates; and establishing priorities for the repair, replacement, or modification of such equipment components as air-handling units, chillers, condensers, compressors, cooling towers, automatic temperature and humidity controls, pumps, pipes, fans, filters, ductwork, and related electrical and plumbing systems. At the same time, energy audits investigate all factors relating to energy use, such as power-consuming equipment and building conditions (doors, windows, insulation, floors, and partitions). After identification of energy conservation opportunities and evaluation of costs and potential energy savings, plans will guide the renovation and improvement work. This process identified a number of major system replacements that the Major Capital Renewal subaccount will fund in addition to minor repairs and renovations requested in the Utility Systems Repairs category.

Funding of \$2,051,000 requested in FY 1991 in this category will support routine repair, replacement, and modification projects. These projects include:

- continuing miscellaneous HVAC repairs at the Hirshhorn Building and the Anacostia Building;
- repairing HVAC, electrical, and plumbing systems at the Smithsonian Tropical Research Institute;
- renovating the cooling tower at the Museum Support Center;

- renovating or repairing electrical systems at the McAlpin-Miller House of the Cooper-Hewitt Museum and various buildings at the Silver Hill Facility and the Smithsonian Tropical Research Institute;
- replacing the deteriorated central drinking water chiller at the American History Building;
- replacing the microwave communications tower to improve telephone service to Barro Colorado Island at the Smithsonian Tropical Research Institute;
- constructing a weather enclosure for the uninterruptable power source for the Multiple Mirror Telescope at the Fred Lawrence Whipple Observatory.

Several planned utility improvement projects include continuing code compliance and energy conservation measures at the Cooper-Hewitt Museum, installing state-of-the-art automated controls on HVAC equipment, and auditing energy efficiency at the Smithsonian Institution Building. In addition, the project to install cabling in the Mall master raceway system will continue.

Advanced Planning and Inspection (\$1,300,000) - Systematic and comprehensive planning is a vital component of an effective facilities management program. Funds in this category support projects to inspect and plan long-range repair and restoration needs and to develop advanced design of future-year projects. The amount of \$1,300,000 requested in FY 1991 will continue development of an integrated master plan for all facilities and update the master plan for the Smithsonian Environmental Research Center. The funds will initiate an accessibility master plan for the Institution and plan restoration requirements in the Natural History Building and the Cooper-Hewitt Museum. In addition, the Smithsonian will continue to use these funds to design smaller, single-year projects before receipt of appropriations as a basis for more accurate cost estimates. The Institution can realize significant cost savings in escalation costs by completing the design of projects in advance of receipt of funding.

REPAIR AND RESTORATION OF BUILDINGS

Detail of FY 1991 Request by Building

<u>FACILITY, ACCOUNT, AND PROJECT TITLE</u>	<u>SUBCATEGORY</u>	<u>ESTIMATED COST</u>
<u>Air and Space Building</u>		
REPAIR, RESTORATION, AND CODE COMPLIANCE		
Third Floor Ceiling Replacement	General	650,000
Public Rest room Modifications	General	265,000
Snow Melter Repair at Ramps	General	300,000
Elevator Monitor Panel Installation	Access	40,000
Fire Protection Master Plan Implementation	Fire	<u>300,000</u>
TOTAL FOR FACILITY		\$1,555,000
<u>American History Building</u>		
MAJOR CAPITAL RENEWAL		
Master Coordination Plan, Phase IVa		3,300,000
Design, Phase IV		290,000
Relocation		<u>200,000</u>
SUBTOTAL		\$3,790,000
REPAIR, RESTORATION, AND CODE COMPLIANCE		
Terrace Repairs	Facade	650,000
Numismatics Security Study Implementation	Access	35,000
Panic Hardware Installation	Fire	25,000
Drinking Fountain System Replacement	Utility	<u>50,000</u>
SUBTOTAL		\$760,000
TOTAL FOR FACILITY		\$4,550,000
<u>American Art and Portrait Gallery Building</u>		
REPAIR, RESTORATION, AND CODE COMPLIANCE		
Waterproofing and Detection	General	50,000
Roof Moisture Repair	Facade	50,000
Fire Protection Improvements	Fire	<u>125,000</u>
TOTAL FOR FACILITY		\$225,000
<u>Anacostia Building</u>		
REPAIR, RESTORATION, AND CODE COMPLIANCE		
General Repairs	General	30,000
Building and Parking Lot Illumination	Access	50,000
HVAC System Repairs	Utility	<u>150,000</u>
TOTAL FOR FACILITY		\$230,000

Arts and Industries Building

REPAIR, RESTORATION, AND CODE COMPLIANCE

Rotunda and Halls Painting	General	165,000
Disabled Accessibility Modifications	Access	<u>200,000</u>
TOTAL FOR FACILITY		\$365,000

Cooper-Hewitt Museum

REPAIR, RESTORATION, AND CODE COMPLIANCE

General Repairs	General	50,000
Roof Replacement	Facade	2,000,000
Fence Repair and Painting	Facade	80,000
Fire Protection Improvements	Fire	200,000
Electrical Renovation, McAlpin-Miller House	Utility	250,000
Energy Study Implementation	Utility	400,000
Restoration Planning Study	AdvPlan	<u>50,000</u>
TOTAL FOR FACILITY		\$3,030,000

Freer Gallery Building

REPAIR, RESTORATION, AND CODE COMPLIANCE

Gallery Level Renovation	General	800,000
Miscellaneous Repairs	General	500,000
Security System Completion	Access	<u>400,000</u>
TOTAL FOR FACILITY		\$1,700,000

Hirshhorn Building

REPAIR, RESTORATION AND CODE COMPLIANCE

Plaza Resurfacing	Facade	300,000
Court Sills Repairs	Facade	30,000
Fire Protection Improvements	Fire	70,000
HVAC Systems Repairs	Utility	<u>260,000</u>
TOTAL FOR FACILITY		\$660,000

Museum Support Center

REPAIR, RESTORATION, AND CODE COMPLIANCE

Fume Hood Modifications	Access	100,000
Cooling Tower Renovation	Utility	<u>90,000</u>
TOTAL FOR FACILITY		\$190,000

Natural History Building

MAJOR CAPITAL RENEWAL

Master Plan Improvements		9,150,000
Design		540,000
Relocation		<u>450,000</u>
SUBTOTAL		\$10,140,000

REPAIR, RESTORATION, AND CODE COMPLIANCE		
Elevator Repairs	Access	90,000
Public Area Restoration Planning	AdvPlan	<u>50,000</u>
SUBTOTAL		\$140,000

TOTAL FOR FACILITY		\$10,280,000
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Silver Hill Facility

REPAIR, RESTORATION, AND CODE COMPLIANCE		
General Repairs, All Buildings	General	100,000
Electrical Repairs	Utility	<u>225,000</u>

TOTAL FOR FACILITY		\$325,000
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Smithsonian Tropical Research Institute

REPAIR, RESTORATION, AND CODE COMPLIANCE		
General Repairs	General	100,000
Structural Repairs, Admin. Bldg. - Tivoli	General	45,000
Roof Repairs, Various Sites	Facade	55,000
Chemical/Hazardous Material Storage-Gamboa	Access	50,000
Chemical/Hazardous Material Storage-Naos	Access	50,000
HVAC, Electrical, & Plumbing Repair-Ancon	Utility	100,000
HVAC Repairs/Replacement,Building 352-Naos	Utility	30,000
Electrical Rewiring - BCI	Utility	35,000
Communications Structure Replacement-BCI	Utility	<u>45,000</u>

TOTAL FOR FACILITY		\$510,000
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Smithsonian Institution Building

REPAIR, RESTORATION, AND CODE COMPLIANCE		
Window Restoration/Replacement	Facade	200,000
Facade Restoration (Masonry)	Facade	50,000
Facade Repointing	Facade	175,000
Rest room Modifications	Access	160,000
Disabled Accessibility Modifications, South Tower	Access	100,000
Energy Audit	Utility	<u>75,000</u>

TOTAL FOR FACILITY		\$760,000
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Smithsonian Environmental Research Center

REPAIR, RESTORATION, AND CODE COMPLIANCE		
General Repairs	General	60,000
Old Dominion Building Lower Level Repair, Design	General	40,000
Water Tower Repairs	General	30,000
Master Plan Update	AdvPlan	<u>150,000</u>

TOTAL FOR FACILITY		\$280,000
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Smithsonian Astrophysical Observatory

REPAIR, RESTORATION, AND CODE COMPLIANCE

Road Repairs and Improvements	General	325,000
General Repairs - Whipple	General	50,000
General Repairs - Oak Ridge	General	60,000
General Repairs - Cambridge	General	15,000
MMT Uninterruptable Power Source		
Enclosure-Whipple	Utility	<u>20,000</u>

TOTAL FOR FACILITY

\$470,000

Miscellaneous Locations

REPAIR, RESTORATION, AND CODE COMPLIANCE

Grounds, Sidewalk, and Parking Lot Repairs	General	100,000
Emergency Repairs	General	200,000
General Facade Renovations	Facade	200,000
Asbestos Abatement	Access	1,000,000
Emergency Power Study Implementation	Access	100,000
Security Lighting - Mall Buildings	Access	350,000
Lightning Protection at Various Sites, Phase 2	Fire	205,000
HVAC Controls Upgrade	Utility	200,000
Mall Master Raceway System	Utility	121,000
Advanced Planning and Design	AdvPlan	500,000
Combined Master Plan for All Facilities	AdvPlan	250,000
Institution-wide Accessibility Master Plan	AdvPlan	<u>300,000</u>

TOTAL MISCELLANEOUS

\$3,526,000

TOTAL REQUEST, REPAIR AND RESTORATION OF BUILDINGS

\$28,656,000



CONSTRUCTION

1989 Appropriation.....	\$ 8,655,000
1990 Appropriation.....	\$ 8,320,000
PL 99-177 & PL 100-119 (Balanced Budget and Emergency Deficit Control Act of 1985 and 1987 Amendments.....	\$ 8,320,000
1991 Estimate.....	\$16,189,000

The FY 1991 request for funding in the Construction account represents a significant investment in the Institution's long-range program goals. The Institution has a growing backlog of infrastructure requirements for physical plant expansion and modification to support program requirements. The Smithsonian staff has assembled these needs into a comprehensive long-range capital improvement program for the next decade. The FY 1991 Construction request will address the most urgent components of this program. Funding of these projects is essential to maintain vitality in the Institution's far-reaching programs of research, collections management, public exhibitions and education, and other services.

This year's Construction request is as follows:

MAJOR CONSTRUCTION

National Museum of the American Indian	8,130,000
Natural History East Court Building	1,500,000
Smithsonian Tropical Research Institute Floating Laboratory	<u>1,550,000</u>
Subtotal	\$11,180,000

CONSTRUCTION PLANNING

MINOR CONSTRUCTION, ALTERATIONS, AND MODIFICATIONS	<u>4,009,000</u>
TOTAL	\$16,189,000

National Museum of the American Indian (\$8,130,000) - On November 28, 1989, President Bush signed Public Law 101-185 establishing the National Museum of the American Indian. The basis of this new museum is the Heye Foundation collection, which includes one million Indian artifacts from all parts of the Western hemisphere. Shortly, the New York State courts will rule on the transfer of the Foundation's collection to the care and custody of the Smithsonian. The agreement between the Smithsonian Institution and the Museum of the American Indian, Heye Foundation, signed in May 1989 also provides for transfer of the Foundation's endowment and most of its property, including a 40,000-volume library and an 86,000-item archives.

The creation of this new national museum is the culmination of almost a decade of negotiations between the Foundation, the City and the State of New York, and, more recently, the Smithsonian Institution. When the new museum is completed in the late 1990s, it will stand as a tribute to the many and varied contributions of American Indians, Eskimos, Aleuts, and other native-American cultures. In Congressional testimony describing the potential of the museum, Secretary Robert McC. Adams has said, "It is likely to alter beyond all expectation public understanding of American Indian people."

Congress is considering legislation to provide facilities for the Museum to be housed in three locations:

- a major museum building to be constructed on the Mall in Washington, D.C., on land reserved for Smithsonian use by Congress in 1975;
- a satellite exhibition and education center to be located in a portion of the Old United States Custom House at the tip of lower Manhattan in New York City;
- a collections storage and research facility on Smithsonian land in Suitland, Maryland.

The Institution anticipates four major sources of funding for construction of these facilities: New York City; the State of New York; Federal appropriations; and private donations. The Institution received an appropriation in FY 1990 for programming and planning all three facilities and the design of the Custom House conversion. For FY 1991, the Smithsonian requests \$8,130,000 to prepare the Custom House space, to begin design of the Suitland building, to continue planning for the Mall museum and to complete overall planning and programming for the new Museum. The details of this request are as follows:

The Old United States Custom House, New York City: The Institution will convert space in the Old United States Custom House in lower Manhattan, New York City, to house an extension of the National Museum of the American Indian. The New York facility, to be renamed in memory of George Gustav Heye, will contain space for exhibitions, education, a library and other public service programs. The Institution projects the cost of preparing the U.S. Custom House for museum use to be approximately \$25 million. The State of New York and New York City have each pledged to contribute one-third of the cost, or up to \$8 million apiece, toward construction of the George Gustav Heye Center. The Institution received \$600,000 in FY 1990 for planning and design of the Custom House facility. For FY 1991, the Smithsonian requests \$6,700,000 for construction. This assumes the application of the 2:1 match of funds provided by New York City and the State to those obtained by the Institution for each stage of the design and construction process. The Institution will request funding to furnish and equip the Center in FY 1992. The current schedule calls for opening the facility to the public in FY 1994.

The Suitland Building: The Institution plans to construct a facility adjacent to the Museum Support Center to provide proper housing for the Heye Foundation collection. This building will collocate this extensive collection of Indian artifacts with Indian artifacts from the National Museum of Natural History, providing a central location for conservation, preservation, and collections-related research activities. The Institution currently expects the storage facility to cost approximately \$44 million to design, build, and equip, based on a construction start in 1992. The Smithsonian will use \$300,000 appropriated in FY 1990 for preliminary planning purposes. This planning will identify a specific site and building configuration, provide details such as geotechnical data, and help refine construction cost estimates and schedules. For FY 1991, the Institution requests \$1,000,000 to begin design of the building. The Smithsonian will request funding for design completion, construction, and equipping in subsequent years. Upon completion of the building in FY 1995, the Institution will relocate the Heye Foundation collection from its New York storage site.

The Museum on the Mall: The Institution will construct a new building on the National Mall near the foot of Capitol Hill, adjacent to the most frequently visited museums in the world. Congress reserved the last remaining construction site on the

Mall for the Smithsonian in 1975. The location will provide excellent exposure for this significant collection of native-American artifacts. The Institution expects that this facility will house permanent and changing exhibitions, reference and collection areas, an auditorium and theater, museum shops, public education facilities, and space for research and other museum programs. The Institution projects the total cost of construction of the Mall building to be in the range of \$106 million and expects that approximately \$35 million will be provided from a national fund-raising campaign.

This estimate assumes a construction start in 1994 and includes the cost of equipping the building. Initial planning efforts will define the program requirements and refine the construction and equipment estimate as well as relevant logistical and operating requirements and costs. With \$720,000 received in FY 1990, the Institution will begin overall programming and planning for the new Museum as well as detailed planning for the Mall museum building. For FY 1991, the Institution requests \$430,000 to complete overall programming and to continue preliminary planning of the Mall building. The current schedule calls for completion of the building in FY 1997 and public opening in 1998.

Natural History East Court Building (\$1,500,000) - The Natural History Building on the Mall houses more than 1,200 employees of the Smithsonian Institution and related agencies, including 230 scientists and associated staff. Each year these individuals, along with over 3,000 visiting scientists, conduct basic collections-related research in a broad range of subjects critically important in advancing scientific knowledge and understanding of natural phenomena. In addition to the large force of scientific staff and other personnel, the building also houses huge collections, numbering well over 100 million specimens, and 30 public exhibition halls with major associated educational and outreach activities.

The National Museum of Natural History (NMNH) faces two enormous challenges regarding space for the immediate future: accommodating a total building renovation of the heating, ventilating, and air-conditioning (HVAC) system, and relieving tremendous overcrowding. The Museum proposes to meet these two challenges by constructing a building inside the Natural History Building's East Courtyard.

In the immediate years ahead, the Museum must deal with a complete renovation of the Natural History Building's aging HVAC system. This project, funded from the Repair and Restoration of Buildings account, also will include asbestos removal, window replacement throughout the building, and some work on fire protection and security systems. During the 7-10 years it will take to complete this project, the life of the Museum will be totally disrupted. Large blocks of collections will be moved back and forth. Entire exhibition spaces will be closed to the public and reopened. Most staff members and virtually every activity will have to relocate temporarily. In fact, the Museum has not faced a renovation project of this magnitude since the Natural History Building first opened in 1910. Given the extent and duration of the HVAC renovation, everything possible must be done to minimize disruption, particularly of the Museum's scientific productivity.

The second major challenge is severe overcrowding of staff and activities. During the last 25 years the Museum has responded to major challenges facing the scientific enterprise at large, such as the rapid destruction of the diversity of life in the tropics. To meet these challenges, the Museum has increased its efforts and enlarged both its programs and staff. As a consequence, offices, laboratories, and collection spaces have been divided and subdivided; four large exhibit halls have been

closed indefinitely to accommodate staff space needs. Two halls are being used as staging areas to prepare collections for transfer to the Museum Support Center (MSC) in Suitland. Even when the collections transfer is completed there will not be enough space available to accommodate all the staff functions in the Natural History Building or to house under adequate conditions the Museum's diverse programs.

To meet its challenges regarding space, the Museum considered several alternatives. To accommodate temporary relocations for the HVAC renovation, the Museum must find substantial temporary space, either off-site or on-site. Off-site leased space would not provide adequate conditions and facilities without being prohibitively expensive in direct costs and in the toll the move would take on the academic and public life of the Museum. On-site relocation, requiring 125,000 square feet of staging space under the optimum 7-year plan for renovating the HVAC system, would close down a major portion of the public exhibition space and have a strongly negative impact on the visiting public.

After weighing its options, the Museum settled on the East Court Building proposal to resolve both space problems. The new East Court in-fill building will interconnect directly with the existing building and ultimately be an integral part of the Natural History Building.

During the HVAC renovation project, the East Court Building will provide approximately 80,000 net square feet of relocation-staging space for offices, laboratories, and collections. Although this falls short of the estimated need, the Museum can manage the necessary relocations by temporarily compressing some of the activities and collections within the Natural History Building and using a limited amount of exhibition space for the duration. At the end of the HVAC construction period, the Museum will have 80,000 square feet of permanent space to accommodate the currently overcrowded research laboratories, offices, collection areas, and public exhibit, education, and other outreach and Institution support activities.

The preliminary cost estimate for the East Court Building is \$25 million. This estimate includes the cost of relocating the greenhouse, osteology preparation laboratory, and building trades shops now located in buildings presently in the East Courtyard. It does not include furnishing and equipping costs.

The Institution will complete the necessary planning for the new building during FY 1990, using Construction Planning funds. The planning process will identify the program elements to be included, develop specific space and configuration requirements, and provide a more precise cost estimate and construction schedule. The Institution requests \$1.5 million in FY 1991 to design the new building. This funding will allow the Smithsonian to proceed with its plans to renovate the Natural History Building and will also provide valuable permanent space for the Museum's programs.

Smithsonian Tropical Research Institute (\$1,550,000) - The Smithsonian Tropical Research Institute (STRI) is the world's premier center for basic research in tropical biology. However, many STRI facilities are old, converted buildings, some dating from the turn of the century. Not constructed for research purposes, the buildings are inefficient and in some instances unsafe. The upgrading of these facilities is a prerequisite for STRI to fulfill its responsibilities to the Nation.

Research at STRI is unique because of the two-ocean capability of its marine program. STRI can easily undertake comparative studies between the Atlantic and Pacific Oceans, where biologically related flora and fauna exist in quite different

physical regimens. The separation of these populations began three to five million years ago, when the Isthmus of Panama rose from the ocean. In addition to dating the separation, STRI can also examine long-term environmental impacts on animal and plant populations.

Through consistent support for the STRI Facilities Master Plan, Congress has recognized the importance of STRI's programs and the need for improvement in its facilities. In 1986, the Smithsonian received under Public Law 99-423 Congressional authorization to plan and construct additional research and dormitory facilities at various STRI sites in Panama. Subsequent appropriations have allowed the Institution to begin construction of several of these new facilities. The Earl S. Tupper Laboratory and Conference Center is now complete.

The Facilities Master Plan originally outlined improvements to existing research facilities at the Galeta Island Laboratory and the San Blas Field Station on the Atlantic coast. As a result of a 1986 oil spill near the Galeta Island Laboratory, however, the site is no longer appropriate for the central Atlantic Laboratory. In fact, STRI will not be able to use the Galeta site for normal research for many years. The area will be affected well into the future by chronic levels of oil and it will be vulnerable to additional spills as long as the Texaco refinery, where the spill occurred, is in operation.

Consequently, STRI has had to modify its Master Plan and select an alternative to Galeta. A comprehensive reassessment of the Atlantic coastal environment did not identify a site for a major laboratory. Possible locations either were too remote for adequate support or were subject to severe environmental degradation. However, the Atlantic survey did indicate substantial diversity in trends in populational, agricultural, and industrial development in the region. This diversity provides an opportunity to examine the effects of various levels of development on coastal marine resources and habitats. To take maximum advantage of this opportunity, STRI will require a mobile, floating laboratory facility (a vessel).

The Institution has therefore altered its construction program for the Atlantic segment of the Facilities Master Plan. Construction plans for the new San Blas facilities remain unchanged, but Galeta construction will include only the near-term segment. STRI has now determined to construct the Atlantic Laboratory as a floating research facility that can support research at sites extending from the Atlantic Coast of Colombia to the coast of Costa Rica. Congress appropriated \$1,930,000 in FY 1990 for improvements at the two existing facilities and to plan for acquisition of a mobile, floating laboratory vessel.

For FY 1991, the Institution requests \$1,550,000 to construct a research vessel for mobile research on marine systems. Currently STRI relies on the R/V Benjamin, a 65-foot, 26-year-old converted motor yacht donated to STRI ten years ago. While, the Benjamin is adequate as a small floating residence, it has no laboratory or marine sampling gear and lacks adequate space for small boats, SCUBA diving, and provisions. It is also slow, making cruise time long and work time short. Heavy field use has taken its toll, and the boat will have to be scrapped in a few years. In 1988 days at sea increased from 90 (1983-88 average) to at least 170 for a total of 13 cruises. A similar schedule was planned for FY 1989, but several longer cruises had to be cancelled because the vessel was no longer considered seaworthy enough to go into rougher sea conditions. The same restrictions will hamper the 1990 schedule.

Despite its limitations, the Benjamin has served as a base for now-famous studies of eastern Pacific reefs, including the devastating effects of 1983 of the periodic climatological phenomenon known as El Nino, the behavior and diving physiology of sea snakes, the ecology of island birds, and paleontological exploration. Yet STRI's experience has shown that the right combination of properly designed working space and accommodations cannot be obtained by reconditioning and refitting donated or other "zero cost" vessels.

The new research vessel will serve as a mobile near-shore laboratory, allowing research in a wide variety of otherwise inaccessible sites. These include many coastal areas in Panama and neighboring countries as well as important and diverse island groups such as the Perlas Islands in the Bay of Panama and the eastern part of the San Blas Archipelago. The vessel will greatly improve the ability of STRI scientists to perform marine research across national boundaries into Costa Rica, Venezuela, Colombia, and Ecuador.

The oceanographic, marine sampling, and laboratory capabilities of the vessel will enhance STRI's research capacity for investigating major environmental phenomena. These phenomena include the El Nino, the effects of natural disasters such as storms and earthquakes (which often occur in areas inaccessible except by sea), and the feasibility and potential ecological impact of alternative sites for a new transisthmian canal. The vessel will be capable of transiting the Panama Canal and will therefore be available for research in both oceans.

The characteristics of this vessel will be:

- a length of 90 feet, 25 abeam, and an 8-foot draft;
- twin diesel engines;
- redundant generators for electricity, desalinators for fresh water, and central air conditioning;
- accommodations, wet and dry laboratories, bottom and mid-water sampling equipment, diving facilities and work space for 4 crew and up to 12 scientific staff for cruises of up to 3 months;
- a range of 2,500 miles and cruising speed of 12-15 knots;
- autopilot, satellite navigation, radar, and radio communications.

Construction of this new research vessel will allow STRI's Facilities Master Plan and its unique tropical biology research to proceed.

CONSTRUCTION PLANNING

An essential part of an effective facilities development program is the ability to assess requirements and make detailed long-range plans. A comprehensive long-range planning program identifies major issues affecting each expansion project, including program needs, spatial ideas, operating logistics and costs, and preliminary construction cost estimates. The Institution initiated an improved long-range planning capability with funds received in FY 1989. Staff will continue planning future projects with Construction Planning funds received in FY 1990.

For FY 1991, the Smithsonian requests \$1,000,000 to continue development of a comprehensive long-range capital improvement program. This planning process will result in better defined plans for future year construction projects prior to authorization and budget requests. The Institution is currently considering a facilities expansion or improvement program that may total \$600,000,000 over the next ten years. Some of the most significant projects that will require additional planning are the renovation of the General Post Office Building, the Air and Space Museum Extension, and the Collections Management Center at Suitland. Annual resources of \$1.0 to \$1.5 million will ensure continued feasibility studies, planning, and concepts upon which to base precise designs and cost estimates for construction of these and other projects. With these resources the Institution will also establish operating and logistical support requirements and make required environmental assessments for critical capital improvement projects. This information will assist Smithsonian management decision making and provide the basis for review commission and Congressional approval.

The absence of planning resources results in rough approximations of project requirements, such as space and configuration, construction and operational costs, and environmental and logistical factors. Such absence also results in capital improvement planning without coherence and unified direction. To avoid these problems, the Institution requests continued support for its long-range planning program.

MINOR CONSTRUCTION, ALTERATIONS, AND MODIFICATIONS

Projects in this category include:

- minor new construction (under \$1,000,000 in estimated cost);
- alterations and modifications to buildings to meet programmatic objectives in the areas of research, collections management, exhibitions, and public services.

For FY 1991, the Smithsonian requests \$4,009,000 for the projects described below.

Air and Space Building (\$200,000) - For FY 1991, the Smithsonian requests \$200,000 to finish renovating the vacated public cafeteria on the third floor. The opening of the new National Air and Space Museum restaurant on the east terrace in August 1988 freed this space for other activities. The Museum plans to move the Center for Earth and Planetary Studies into this space. The Center's research programs have grown significantly in recent years in response to increased interest in space related activities as well as in global warming. The Museum will also use the space to consolidate public affairs, curatorial, and registrarial functions now scattered throughout the building. The Institution will use \$215,000 received in FY 1989 and \$320,000 received in FY 1990 for design and construction required to provide more efficient workspace for the Center for Earth and Planetary Studies and to relocate the employee cafeteria. For FY 1991, the Smithsonian requests \$200,000 to alter the remainder of the space to house the other consolidated functions.

American Art and Portrait Gallery Building (\$150,000) - For FY 1991, the Institution requests \$150,000 to complete installation of permanent storage racks in the attic of the Museum of American Art as part of a renovation begun in FY 1988. The space was formerly unusable for collections storage purposes because it lacked

environmental controls, and ductwork on the floor hampered access. Construction completed with previous funding rerouted the ducts across the ceiling, allowing more effective utilization of the space. The amount appropriated in FY 1990 will fund the framing required for installation of storage racks. For FY 1991, the Institution requests \$150,000 to complete this work.

American History Building (\$500,000) - For FY 1991, the Institution requests funds to continue two projects in the American History Building: mezzanine installation in exhibit halls, and the renovation of the conservation laboratory.

The long-range exhibit reorganization plan for the National Museum of American History (NMAH) calls for construction of a mezzanine system in various galleries on the first, second, and third floors of the building. The mezzanines will create space for study galleries in key exhibits, where visitors may view museum artifacts not normally on exhibit because of inadequate space. On the east side of the third floor, with \$103,000 received in FY 1987, the Museum constructed a mezzanine for the exhibit commemorating the Bicentennial of the Constitution. The Research Center in the present Dibner Library and Physical Science exhibit on the first floor is under construction with funds appropriated in FY 1988 (\$300,000) and FY 1989 (\$370,000). The Museum will use \$400,000 received in FY 1990 to design and construct a mezzanine for the new first-floor "Information Age" exhibit. For FY 1991, the Institution requests \$300,000 to begin design and construction of a mezzanine in the third-floor Photography, News Reporting, and Printing halls. The work will include fabrication and construction of basic steel and concrete galleries over a portion of the exhibit halls, along with necessary stairs, handicapped lifts, and railings.

For FY 1991, the Smithsonian requests \$200,000 to complete renovation of NMAH's conservation laboratory. The Smithsonian received \$300,000 in FY 1990 to begin the conversion. The funds requested for FY 1991 will complete the project. Completion of the renovation will expand the laboratory for the conservation of costumes, textiles, and fragile organic materials. A laboratory meeting the requirements of these materials does not currently exist within the building. Space for it will be acquired by converting areas now used for collections storage and offices. The renovation work will include installing sinks, cabinets, counters, fume hoods, and other equipment needed for conservation of these sensitive artifacts.

Arts and Industries Building (\$275,000) - The Arts and Industries Building (A&I) houses four major exhibition halls. It also houses essential program and administrative activities on the Mall, including those that require public access, such as Public Affairs, Museum Programs, Elementary and Secondary Education, and the National Science Resources Center. Other central support organizations located in this building include Protection Services, Information Resource Management, Equal Opportunity, and Planning and Budget. There is an immediate and continuing need to renovate space to offer more functional work areas for current administrative and program requirements. The Institution will use funds provided in FY 1988, FY 1989, and FY 1990 to begin renovation of space and acquisition of modular furniture to increase future flexibility. For FY 1991, the Smithsonian requests \$275,000 to modify an additional 5,000 square feet. Funding for this ongoing project will support the Institution's efforts to use the space in the Arts and Industries Building efficiently.

Conservation Analytical Laboratory (\$350,000) - The staff of the Conservation Analytical Laboratory (CAL) has grown in the past few years, and CAL plans to add additional professional staff, fellows, and interns. The present space at the Museum

Support Center is inadequate for additional personnel. Conversion of the current seminar room and a portion of the auditorium area will provide the laboratory and office space needed for the new staff. The Institution received \$20,000 in FY 1990 to design these alterations. For FY 1991, the Smithsonian requests \$350,000 for construction. The funds will install fume and exhaust hoods and laboratory sinks and cabinetry. The laboratory space will include specialized facilities for biogeochemistry and photo research. The project will also modify building ventilating, electrical, and plumbing systems serving the area. The funding of these changes will enable valuable research and conservation projects to proceed.

Cooper-Hewitt Museum (\$335,000) - For FY 1991, the Smithsonian requests funds for renovation of the McAlpin-Miller House and the newly acquired Fox House at the Cooper-Hewitt Museum in New York City.

The McAlpin-Miller House is a five-story brownstone townhouse adjacent to the Carnegie Mansion, which houses the exhibits of the Cooper-Hewitt Museum. The Museum uses the building for offices and collections storage. The building is inefficiently laid out, and access to the collections stored there is difficult. Climate controls do not meet museum standards for storage of artifacts. The Museum will prepare a space study of the building with \$35,000 appropriated in FY 1990. This plan will integrate the renovation with mechanical, electrical, and plumbing repairs funded under the Repair and Restoration of Buildings account. For FY 1991, the Institution requests \$75,000 for architectural changes to the building. This work will allow more efficient use of the space for the Museum's activities. Staff will have better access to the collections. Modifications will also help preserve the artifacts by improving the environmental control and other storage conditions.

In 1989, the Cooper-Hewitt purchased the Fox House, next door to the McAlpin-Miller House. This important acquisition will provide much-needed expansion space for the Museum. The Fox House was built in 1905 as a single-family residence and converted to apartments and professional offices in 1945. A number of residential tenants will remain in the building for the next few years. When the current leases expire, the Institution will renovate the entire building for full museum use. Meanwhile, the Museum must make a number of short-term changes to the unoccupied portions of the building. For FY 1991, the Smithsonian requests \$260,000 for this immediate work. The Museum will install appropriate security and fire protection systems and make minor architectural alterations. Without this funding, the Cooper-Hewitt cannot use the building to solve its most urgent space problems.

Freer Gallery Building (\$140,000) - The Institution requests funding for two projects at the Freer Gallery Building: design of site work and landscaping modifications, and installation of a telephone system.

The Institution is currently renovating the Freer Gallery Building with funds received between FY 1986 and FY 1990. For FY 1991, the Institution requests \$40,000 to design modifications to pedestrian circulation in the area between the Freer and the Smithsonian Institution Building that will accommodate the increased pedestrian traffic resulting from the opening of the Kiosk entrance to the S. Dillon Ripley Center in the Quadrangle Complex. Changes will include redirecting or upgrading the driveway and the walkways around the building and installing better signage for pedestrians. Landscaping improvements will provide better visual interplay between the Freer and the Castle. The Institution will request funding in FY 1992 for construction.

The Freer telephone system was completely removed during the early demolition phase of the renovation project. The Institution requests \$100,000 for design and installation of a new telephone system in the Freer Gallery Building. The new system will directly connect the interrelated staff of the Freer and the Sackler Galleries. The work will involve new conduit and wiring and new telephone equipment. The Institution will coordinate the installation of the new phone system with the ongoing renovation project.

Museum Support Center (\$570,000) - For FY 1991, the Institution requests funds for three projects at the Museum Support Center: completion of a weather enclosure at the loading dock, completion of the Laboratory for Molecular Systematics, and initiation of greenhouse design and construction.

The loading dock at the Museum Support Center (MSC) opens directly outdoors. This entrance is the sole access for most collections transferred from other locations for storage. Many of the artifacts shipped to MSC for storage are very delicate. Temperature and humidity changes contribute to rapid deterioration of these objects. To maintain the carefully monitored conditions under which they have been stored, the curatorial staff ships these artifacts in special environmentally controlled vehicles. The weakest link in the chain of environmental control is the MSC loading dock, where lack of a buffer zone exposes the artifacts to weather extremes and truck fumes and compromises the continuity of pest control. The Institution will use \$285,000 appropriated in FY 1990 to design and begin construction of an airlock enclosure around the loading dock area and the entrance to Pod 4. For FY 1991, the Smithsonian requests \$70,000 to complete the work. This enclosure will protect artifacts delivered to or loaded from MSC from exposure to weather conditions. The controlled environment within the enclosure will also reduce the chance for fluctuations in temperature and humidity within Pod 4, thereby also conserving energy.

Congress provided funding in FY 1988 to establish a new program focusing on DNA molecular analysis. The Institution allocated space for this program at the Museum Support Center and will begin renovation of the space with \$150,000 appropriated in FY 1990. For FY 1991, the Smithsonian requests \$100,000 to complete the work. The project will include installation of fume hoods, darkrooms, and workbenches and modification of the electrical system. The new space will meet the standards normally associated with a biomedical facility and ensure safe working conditions for laboratory staff. The requested funding will permit this important research program to proceed.

The Institution also requests \$400,000 to design and begin construction of a 10,000-square-foot freestanding greenhouse at the Museum Support Center. The greenhouse will house living plant collections for anatomic, cytologic, taxonomic, and molecular systematics research for the Laboratory for Molecular Systematics and the National Museum of Natural History's Department of Botany. Growing space in close proximity to the laboratories is vital to ongoing research programs. The greenhouse's heating and cooling system will provide full climate control and limit insect and pest intrusion. A system of walkways and entries will minimize the impact of staff movement on the controlled atmosphere. The greenhouse will enable a number of important research programs to continue. The Institution will request additional funding in FY 1992 to complete the greenhouse.

Natural History Building (\$385,000) - For FY 1991, the Institution requests funding for two projects in the Natural History Building: completion of space suitable for the operations of a new national board and for receiving other advisors

and dignitaries, and continuing modifications to spaces freed by the move of objects to the Museum Support Center.

In 1987, the National Museum of Natural History (NMNH) conducted an outside management study to assess its strengths and weaknesses and to identify ways to ensure its preeminence and success in the future. As a result, the Museum has begun to integrate and strengthen its exhibitions and public programming in relationship to its acknowledged strengths in scholarship. The Museum is in the process of hiring staff to initiate and complete the planning, funding, and construction of modernized exhibitions. The new exhibitions will replace decades-old ones in the Museum and will include related interactive educational activities.

The new director has established this emphasis on exhibitions and integrated programming as the highest priority for the Museum. A keystone to this emphasis is the establishment of a new national advisory board to provide guidance for this effort. The Museum must have appropriate space for board-related activities. Unlike other major Smithsonian museums, NMNH has never had a conference suite to accommodate national and international advisors, consultants, other distinguished visitors and scholars, and public and staff gatherings. The Smithsonian will use \$700,000 received in FY 1990 to design and begin renovation of space for the expanded outreach activities of the new advisory body. For FY 1991, the Institution requests \$285,000 to complete the work. The project includes the construction of a conference room, kitchen, dining room, rest rooms, projection room, and reception area. The suite will occupy about 5,000 square feet of space. If the space cannot be completed quickly, the Museum's efforts to improve exhibition offerings and outreach activities will suffer.

The continuing transfer to the Museum Support Center (MSC) of NMNH's collections presents a much-needed opportunity to reorganize and renovate the space within the Natural History Building to address the needs of growing programs. A major space problem in the building can be relieved only by relocating various functions after first reconfiguring the newly vacated space to optimize its use. Unless funding is made available to the Museum to continue the reconfigurations of space and relocations of functions in the Natural History Building as space is freed by the transfer of objects to MSC, severe crowding as well as inappropriate and inefficient use of space will continue to be a major problem. For FY 1991, the Institution requests \$100,000 to continue this work.

Photographic Services (\$50,000) - The Office of Printing and Photographic Services houses its collection of photographic negatives in the basement of the American History Building. Long-term preservation of the collection requires controlled temperature and humidity conditions. The present film vault is no longer large enough to accommodate the growing collection of negatives. With \$200,000 appropriated in FY 1990, the Institution will install a prefabricated environmental chamber and expand the vault into the adjoining corridor. The work will include electrical, mechanical, and plumbing modifications. The project will also remodel adjacent studio and laboratory space for greater working efficiency. For FY 1991, the Institution requests \$50,000 to complete the project. The Institution will use the funds to purchase and install special built-in equipment to make the new space fully functional. The request will eliminate substandard storage conditions.

Smithsonian Astrophysical Observatory (\$100,000) - For FY 1991, the Institution requests \$100,000 for expansion of space at the Fred Lawrence Whipple Observatory in Arizona.

A basement level was not included during original construction of the Observatory's Commons Building in 1980. Now, with the acute need for additional space in the summit area, enclosure of the basement is a cost-effective solution. The requested funds will enclose the space beneath the building to provide workrooms for staging of the Multiple Mirror Telescope conversion and a remote control room for the new Infrared Optical Telescope Array. These new workspaces are crucial to the operations of these important astrophysical research programs.

Smithsonian Environmental Research Center (\$350,000) - The Smithsonian Environmental Research Center (SERC) at Edgewater, Maryland, performs basic scientific research on coastal land and water systems. Its 42,000 square feet of laboratory, office, educational, and support space occupies several buildings on 2,600 acres of tidal river system land. SERC also rents space in Silver Spring, Maryland, for its solar radiation laboratory. The owner of this building plans to sell it in the near future. As a consequence, SERC must construct additional laboratory space at the Edgewater facility to accommodate this important program. For FY 1991, the Institution requests \$350,000 to add laboratory "modules" to SERC's newly completed Mathias Laboratory building. Construction of laboratory space will avoid disruption of this valuable research program. Consolidation of the laboratory with the rest of SERC activities will also save operating costs and benefit administrative and research communications.

Smithsonian Institution Building (\$100,000) - The Smithsonian Institution Building houses the Office of the Secretary and other senior management of the Institution. Recent changes in the use of the building require minor modifications to the building to provide the necessary support facilities for staff activities. For FY 1991, the Institution requests \$100,000 for this work to ensure the efficient operation of these key organizations.

Smithsonian Tropical Research Institute (\$400,000) - The 1986 Facilities Master Plan for the Smithsonian Tropical Research Institute (STRI) in Panama calls for construction of additional housing for scientists and staff supporting research programs on Barro Colorado Island (BCI). The Institution is using \$895,000 appropriated in FY 1985 to construct 20 staff units in five buildings and a laundry/lounge building. These facilities are currently under construction. For FY 1991, the Smithsonian requests \$400,000 to begin building additional facilities to house the full complement of staff living on the Island. The funds will construct two additional residences. These residences will house two scientists who must live on the Island to conduct their research and provide overall administrative coordination to scholars working there, as well as house eight support staff who provide important operational support to research activities. The new residences will provide safe, efficient, and comfortable accommodations to those working on the Island.

Alterations and Modifications Planning (\$104,000) - For FY 1991, the Smithsonian requests \$104,000 to plan future Minor Construction, Alterations, and Modifications projects. As in other categories of construction activities, such as Major Construction and Repair and Restoration of Buildings, planning is essential for an effective facilities management program. These resources will allow the Institution to assess future requirements for minor changes to existing facilities to accommodate programmatic growth and changes in program direction. Planning studies will evaluate space requirements, make engineering analyses, prepare concept designs for buildings and sites, and estimate total project costs. Careful research into these future needs will result in more accurate cost estimates in advance of budget requests.

SMITHSONIAN INSTITUTION
Annual Visitation
FY 1985 - FY 1989

	<u>FY 1985</u>	<u>FY 1986</u>	<u>FY 1987</u>	<u>FY 1988</u>	<u>FY 1989</u>
<u>MALL</u>					
SI Building ¹	1,046,151	1,035,653	1,160,655	228,409	0
Arts & Industries Building	1,048,089	1,047,397	1,228,911	1,458,532	1,324,126
National Museum of Natural History	5,691,681	5,962,073	7,886,520	7,365,665	6,453,481
National Air and Space Museum	9,160,371	7,752,544	7,750,323	9,237,847	8,397,694
Freer Gallery of Art ²	291,376	308,236	303,613	309,367	0
Sackler Gallery ³	-	-	7,095	547,874	445,087
National Museum of African Art ³	-	-	14,555	643,460	418,022
Ripley Center ³	-	-	4,674	518,763	378,480
National Museum of American History	4,858,483	5,143,334	5,626,565	6,359,369	5,527,747
Hirshhorn Museum and Sculpture Garden	1,059,050	1,057,753	1,033,629	1,278,052	1,048,103
<u>OFF-THE-MALL</u>					
American Art & Portrait Gallery	373,105	346,057	344,358	349,255	408,684
Renwick Gallery	124,684	124,850	218,047	143,020	123,393
National Museum of African Art ⁴	43,661	32,915	-	-	-
Anacostia Museum ⁵	21,603	36,314	12,668	37,682	28,814
Cooper-Hewitt Museum	112,442	190,751	152,618	140,839	128,474
Natl. Zoological Park ⁶	3,100,000	3,300,000	3,500,000	3,100,000	3,200,000
GRAND TOTAL	26,930,696	26,337,877	29,244,231	31,718,134	27,882,105

¹ Closed to the public January 1988. Reopened to the public November 1989.

² Closed to the public September 1988.

³ Opened to the public September 28, 1987.

⁴ Off-Mall location closed to the public June 1986.

⁵ Closed to the public January to April 1987 and reopened in May at new location.

⁶ Number of visitors is an estimate based on a sampling system.

COLUMBUS QUINCENTENARY PROGRAMS

The Smithsonian Institution's Columbus Quincentenary programs commemorate Christopher Columbus' landfall in the Americas. The programs focus on the encounter between cultures rather than on the historical events and personalities. The occasion offers an opportunity for the Smithsonian to examine the cultural, historical, and scientific repercussions of the hemispheric encounter. The Smithsonian's Quincentenary commemoration will serve as the basis for a permanent program emphasizing the history and cultures of the Americas.

The centrally-coordinated, pan-Institutional Quincentenary commemoration reflects the diversity of the Smithsonian research interests and provides the general public with a broader perspective on the significance of Columbus' voyages. Twenty bureaus and offices will present programs including exhibitions, conferences, publications, sound and video recordings, and a television series in collaboration with scholars from the Smithsonian and other institutions in the United States and Latin America. This international and interdisciplinary dimension will highlight the experiences and contributions of all the peoples who were affected by Columbus' voyage of exploration.

National Museum of Natural History: The National Museum of Natural History is planning a major exhibition organized around the concept "Seeds of Change." The exhibition, opening in October 1991, will examine plant, animal, and disease exchanges that occurred between the Old and New Worlds transforming the cultural and ecological landscape of the Americas. In addition, the Museum is sponsoring a wide range of symposia, educational programs and publications associated with the exhibition. The Museum presented the second of its Quincentenary symposia in November 1989. The symposium "Disease and Demography in the Americas: Changing Patterns Before and After 1492" examined issues concerning native population estimates, and controversies among scholars regarding native-American demographic decline.

National Air and Space Museum: By October 1992, the National Air and Space Museum will produce a world atlas based on new satellite images and publish a user's guide to the atlas. In addition, an exhibition titled "Where Next, Columbus?" will examine space exploration in the next 500 years, the solar system, the search for extraterrestrial life, and the social and scientific problems that are a part of extensive exploration.

National Museum of American History: The National Museum of American History is developing a major exhibition titled "American Encounters." The exhibition focuses on encounters between indigenous, Spanish and Anglo-American cultures in New Mexico and the subsequent adaption of Indian and Hispanic cultures. An annual series of small case exhibitions and public symposia has already begun leading up to the opening of "American Encounters" in October, 1992. A second exhibition, "Contrasts: 40 Years of Continuity and Change in Puerto Rico," based on the photography of Works Project Administration (WPA) artist Jack Delano, will be on display in August and September, 1990.

National Museum of American Art: The National Museum of American Art (NMAA) will present an exhibition titled "The West as America: 1820-1920" to open in March, 1991. Through major paintings of the mid and late 19th century, the exhibition will examine the myths that formed a national bias for expansion. In the spring, 1992, NMAA will display a major exhibition of works by Mexican-American artists titled "Chicano Art: Resistance and Affirmation." The Museum is also collaborating with the National Portrait Gallery on an exhibition titled "American Painting and Sculpture at the World's Columbian Exposition." Scheduled for 1993, this exhibition is based on the American paintings and sculptures originally shown at the 1893 World's Columbian Exposition in Chicago.

National Portrait Gallery: The National Portrait Gallery (NPG), in collaboration with the Kimbell Museum in Fort Worth, Texas, and the Museo de Prado in Madrid, is developing an exhibition of portrait treasures of Spain. Scheduled for 1992, the exhibition will present more than 50 works by artists during the 16th-century reign of Philip II. In FY 1993, NPG will present, in collaboration with NMAA, an American paintings and sculpture exhibition based upon the 1893 World's Columbian Exposition in Chicago.

Hirshhorn Museum and Sculpture Garden: The Hirshhorn Museum and Sculpture Garden will feature an exhibition titled "Four Latin American Pioneers of Modernism" that will contain works by Diego Rivera, Joaquin Torres-Garcia, Wifredo Lam and Roberto Matta--20th-century Latin American artists who have explored new frontiers of expression. The exhibition will open in June, 1992.

Cooper-Hewitt Museum: The Cooper-Hewitt Museum will present an exhibition on maps to look at how they document changing views of the world through the ages, and how their designs reflect changing technologies. The exhibition will open in the spring of 1992.

Smithsonian Institution Traveling Exhibition Service: The Smithsonian Institution Traveling Exhibition Service will design and distribute traveling versions of Smithsonian exhibitions. Among them are versions of the International Gallery's "Tropical Rainforests: A Disappearing Treasure," the National Museum of Natural History's exhibition "Seeds of Change," the National Air and Space Museum's "Where Next, Columbus?", and the National Museum of American History's "Contrasts: 40 Years of Continuity and Change in Puerto Rico." In addition, "Paintbrush Diplomacy: Children's Art from the Americas," which includes 65 paintings by children from Argentina, Brazil, Ecuador, Haiti, Mexico, Panama, Canada and the U.S., will be presented in May, 1990.

Office of Public Affairs: The Office of Public Affairs will promote Smithsonian Quincentenary activities through print, media publications, television, public service announcements, and radio advertisements.

Smithsonian Institution Press: The Smithsonian Institution Press is publishing scholarly and popular books related to Smithsonian programs and other topics. Three books have already been published: Artifacts of the Spanish Colonies of Florida and the Caribbean, 1500--1800 (Vol. 1) by Kathleen Deagan; Monte Verde: A Late Pleistocene Settlement in Chile (Vol. I, Palaeoenvironment and Site Context) by Tom D. Dillehay; and Archeological and Historical Perspectives on the Spanish Borderlands West edited by David Hurst Thomas, the first book in the three-volume series of Columbian Consequences. Forthcoming is the bilingual publication, My Puerto Rico/Puerto Rico Mio, a photo essay by Jack Delano, a WPA photographer.

Office of Folklife Programs: The Office of Folklife Programs will present "living exhibitions" on the National Mall; a series of three symposia dealing with cultural expressions from agricultural, commercial and industrial societies in the Americas; a scholarly program of folklore, ethnographic and ethnomusical research; and associated publications. The first exhibition entitled "The Caribbean: Cultural Encounters in the New World" was presented at the annual 1989 Festival of American Folklife in June-July. In 1991 and 1992, the Festival will feature indigenous cultures of the Americas. Smithsonian radio programs, teacher training workshops and exhibition program books will augment the exhibitions. The symposia "Seeds of the Past" and "Seeds of Commerce" were presented in September, 1988, and February, 1989, respectively. A third symposium "Seeds of Industrialization" is being planned for 1990. In addition, Folkways Records will present a Quincentenary collection of music recordings in 1992.

Office of Elementary and Secondary Education: The Office of Elementary and Secondary Education (OESE) will develop a series of multi-cultural education packets written in English, Spanish, and Portuguese to introduce pre-school age children to the cultural and animal life of the Americas. During 1991, the Office will present a symposium on the effects of cultural transplantation on Latin American and U.S. folk art traditions--story telling, textile arts and music; produce a video recording of the symposium; and distribute a special issue of Art to Zoo that will show teachers how to use multi-cultural resources in their communities for teaching about Latin America.

Office of Quincentenary Programs: The Office of Quincentenary Programs (OQP) coordinates the Smithsonian's Quincentenary commemoration. The Office also publishes "The New World" a quarterly newsletter with English, Spanish and Portuguese editions to highlight the Smithsonian's Quincentenary programs. In addition, the Office sponsors a related symposium each year; "Ice Age Origins: Americans Before Columbus," "Musical Repercussions of 1492," and "Violence and Resistance in the Americas: The Legacy of Conquest" were held in 1987-1989. A symposium titled "The Image of Women in the Americas: Myth & Reality" will be presented in the fall of 1990. In 1991, the Office will organize a symposium on the Americas in cooperation with cultural attaches from several Ibero-American countries. Also in 1991, a teleconference on cultural and biological diversity of the Andean region will be broadcast throughout the hemisphere. The Office also supports the American Indian Outreach Project which will develop an exhibition based on the theme of ethnobotany. The exhibition which can be adapted for local communities will tour native-American educational and tribal centers in the United States.

Smithsonian Tropical Research Institute: In 1992, the Smithsonian Tropical Research Institute (STRI) will co-sponsor the Fourth World Congress on National Parks in Panama to address the conservation of natural resources in the Americas. In addition, STRI will present an international symposium, "Non-Imperial Politics" which will allow experts in the fields of archeology, paleo-environmental studies, and ethnohistory to share their research.

National Zoological Park: In 1992, The National Zoological Park will highlight the unique tropical ecosystem in an exhibition titled "Amazonia." The exhibition will provide closeup views of the complex webs of partnerships and competition that exist among plants and animals of the rainforest and discuss the global impact of the rainforests' destruction. Also in 1992, the Zoological Park will create "A Heritage Garden, Plant Pioneers: Algonquian Indians' Food and Medicines." This "living garden" will be installed and cared for by volunteers from local American Indian groups.

Other Quincentenary Activities: Other events include a public symposium "Exploring the Unknown," sponsored by the Office of Interdisciplinary Studies, and the Office of Museum Programs will conduct training sessions for museum professionals from Latin America and the Caribbean. Museum Programs has produced taped, bilingual presentations on the preservation of cultural property. In addition, several Smithsonian bureaus are collaborating on a six-part television series, "The Buried Mirror," written and narrated by Mexican author Carlos Fuentes, which will examine Spanish and indigenous contributions to the Americas and the emergence of "new cultures" in both historical and contemporary contexts. The Resident Associates' Program will work with museum curators to develop complementary programs such as: lectures, seminars, workshops and performances with a focus on Quincentenary-related exhibitions and programs.

The accompanying table identifies Federal funding appropriated in FY 1989 (see table), estimated in FY 1990 and requested for FY 1991 to support Columbus Quincentenary programs:

SMITHSONIAN INSTITUTION
FEDERAL FUNDING FOR COLUMBUS QUINCENTENARY PROGRAMS
FY 1989 - FY 1991

	FY 1989 Approp. ----- \$000s -----	FY 1990 Estimate ----- \$000s -----	FY 1991 Request ----- \$000s -----
National Museum of Natural History	130	455	462
National Air and Space Museum	41	41	41
National Museum of American History	125	350	459
National Museum of American Art	25	45	60
National Portrait Gallery	15	15	40
Hirshhorn Museum and Sculpture Garden	20	20	50
Cooper-Hewitt Museum	24	24	24
Smithsonian Institution Traveling Exhibition Service	55	55	55
Office of Public Affairs	0	0	15
Smithsonian Institution Press	0	0	15
Office of Folklife Programs	90	105	160
Office of Elementary and Secondary Education	38	38	15
Office of Quincentenary Programs	50	86	126
	-----	-----	-----
Total Smithsonian Institution	613	1,234	1,522

SMITHSONIAN INSTITUTION
MUSEUM PROGRAMS AND RELATED RESEARCH
(SPECIAL FOREIGN CURRENCY PROGRAM)

1989 Appropriation.....	-0-	—	
1990 Appropriation.....	-0-	--	Equivalent in Excess
1991 Estimate.....	-0-	—	Foreign Currencies

PROGRAM OF GRANTS FOR RESEARCH

The Smithsonian Institution, through its Special Foreign Currency Program, makes grants to United States universities, museums, and other institutions of higher learning, including the Smithsonian itself, primarily for research and advanced professional training in fields of traditional Smithsonian competence.

Excess currencies appropriations directly funded the Program through FY 1986. Outlays from the budget authority appropriated through FY 1986, including the Forward-Funded Reserve for the American Institute of Indian Studies, will continue into the mid-1990s. In addition, since FY 1986, the Smithsonian has received allocations of U.S.-owned Indian rupees from the funds appropriated to the Department of State in FY 1985 for the establishment of the U.S.-India Fund for Educational, Cultural, and Scientific Cooperation. (OMB Bulletin 90-04, issued on December 28, 1989, indicates that the Secretary of the Treasury has designated Burma as an excess currency country for FY 1990 and FY 1991.)

For more than 20 years, the Special Foreign Currency Program has been a major source of support for research carried out by United States institutions in those countries for which excess foreign currencies are available. The full responsibility for the design, execution, and publication of research results rests with a scholar working within the program of a United States institution. Smithsonian foreign currency grants strengthen the research and training activities of collaborating institutions abroad, since most projects directly involve host country institutions and scholars. Enduring professional ties, which result from joint efforts and scholarly exchange, contribute to the strongest form of United States cultural relations with other nations. These ties also contribute to the integration of the worldwide advancement of science. Accordingly, they narrow the gap between the industrial and the developing nations. Moreover, research sponsored by the Program, aims, in part, at improving understanding of the environment and the management and conservation of scarce natural and cultural resources that are threatened by the rapid growth of world population and technological development.

In FY 1989, ongoing research supported by these grants included the following projects of special interest:

- archeological and geomorphic studies at Harappa in Pakistan that provide new information on the prehistoric settlements of the Lower Indus valley;
- an ongoing exchange between Indian and United States astronomers that answers questions in the application of nuclear, elementary, and relativistic physics to astrophysics;
- comparative studies of dance orientation and vision in Asian honey bees that offer new perspectives on how bees and other insects process visual information in orienting their movements;

- an exchange between United States and Pakistani folklorists, anthropologists, and linguists that gives Pakistani researchers access to current Western research techniques in music, foodways, language, and art;
- examination of archeological sites in Burma that clarifies the importance of Burma in the early formation of regional styles of art and architecture in Southeast Asia.

Further, with emphasis on the exchange of information through small workshops, symposia, and field conferences, the Program encourages international research in specialized areas. In FY 1989, for example, United States scholars received support for participation in exchanges on the subjects of astronomy, environmental education, sociology, soil zoology, Rajasthani studies, visual anthropology, and zoo management.

FORWARD-FUNDED RESERVE FOR THE AMERICAN INSTITUTE OF INDIAN STUDIES

Since 1967, the Smithsonian has provided annual funding through the Special Foreign Currency Program to the American Institute of Indian Studies (AIIS) for its fellowships, research, symposia, and publications programs, as well as its administrative costs. The Smithsonian has helped sustain this Institute and other American research centers abroad for the last 20 years because of their significant contributions to scholarship and science without regard for national boundaries and because of their special service to American scholars.

With Special Foreign Currency Program funding received from FY 1980 through FY 1985, the Smithsonian established a forward-funded reserve of \$7,170,000 equivalent in rupees. This reserve enabled the AIIS to sustain its programs after the removal of India from the excess currency list in 1985. Since FY 1986, AIIS, with oversight from the Smithsonian, has drawn upon the funds from this reserve for its fellowship program and administration costs in India. The Institution continues to examine annual proposals through its peer review system before releasing funds from the reserve account to AIIS. The reserve should support AIIS programs through the 1990s in conjunction with continued support from the U.S.-India Fund.

U.S. - INDIA FUND FOR EDUCATIONAL, CULTURAL, AND SCIENTIFIC COOPERATION

In FY 1985, Congress appropriated \$110 million equivalent in U.S.-owned Indian rupees to the Department of State to establish the U.S.-India Fund for Educational, Cultural, and Scientific Cooperation. Since FY 1986, the Smithsonian has received allocations from this fund to continue programs in India similar to those administered under the Special Foreign Currency Program, which would otherwise have ended when India lost excess currency status in 1985. The Institution received an amount of \$1.4 million in FY 1986, \$1.5 million in FY 1987, \$1.8 million in FY 1988, \$1.75 million in FY 1989, and \$2.5 million for FY 1990.

January 17, 1990

Federal Expenditures for Consulting Services
(All Charged to S&E Funds)

In accordance with 31 U.S.C. 1114(A) and OMB Circular A-120 the following consulting services are identified for FY 1989. Similar services for FY 1990 are those that have been identified tentatively in the Institution's advance procurement plans. Services for FY 1991 have not yet been identified.

	<u>Amount</u>	<u>Project</u>
<u>FY 1989</u>		
Personnel Appointments		None reportable
Contracts	27,000	Advisory services for the Hirshhorn Museum.
	16,885	Assessment of library operations at the Tropical Research Institute.
	18,500	Analysis of administration, maintenance and operation at the National Zoological Park.
	24,000	Museum of American Indian Development.
Advisory Committees	5,000	Quincentenary Advisory Council for the Office of Folklife Programs.
<u>FY 1990</u>		
Personnel Appointments		None reportable.
Contracts	20,000- 50,000	Exhibit design services for American Encounters in the Museum of American History.
Advisory Committees	6,000	Quincentenary Advisory Council for the Office of Folklife Programs.

SMITHSONIAN INSTITUTION - FINANCIAL SUMMARY
Fiscal Years 1989 - 1991

(\$1,000s)

SI OPERATING FUNDS	FY 1989 Actual	FY 1990 Projected	FY 1991 Budget
FUNDS PROVIDED:			
FEDERAL S&E APPROPRIATION	211,240	225,479	256,174
GOVERNMENT GRANTS & CONTRACTS	20,977	29,970	31,576
NON-APPROPRIATED TRUST FUNDS			
Investment Income			
-Unrestr. General & Special Purpose	8,949	6,900	7,000
-Restricted	7,998	6,616	6,826
Gifts & Grants (Excl. Gifts to Endow)			
-Unrestr. General & Special Purpose	1,455	1,550	1,550
-Restricted	17,778	14,309	14,975
Self-Generated Revenues			
Institutional (Gen. Unrestr.)			
-Gross Revenues	187,111	203,555	206,012
-Less Related Expenses	(161,911)	(175,935)	(177,377)
-Net Income	25,200	27,620	28,635
Bureau (Special Purpose)			
-Gross Revenues	8,675	11,966	11,958
-Less Related Expenses	(7,231)	(10,590)	(10,140)
-Net Income	1,444	1,376	1,818
Other Misc. - Unrestricted	3,367	2,360	4,004
- Restricted	4,636	1,000	1,000
Total Non-Approp. Trust Funds - Gross	239,969	248,256	253,325
-Net of Expenses of Self-Gen. Revenues	70,827	61,731	65,808
TOTAL ALL OPERATING FUNDS PROVIDED:			
-GROSS	472,186	503,705	541,075
-NET	303,044	317,180	353,558
FUNDS APPLIED:			
Research	67,419	77,329	98,284
Less: SAO Overhead Recovery	(3,807)	(3,850)	(5,332)
Museums	111,020	114,429	134,898
Public Service	7,104	5,658	13,382
International Activities	2,094	1,861	1,788
Special Programs	12,908	24,673	0
External Affairs	2,877	2,981	2,901
Administration			302
-Federal Appropriation	17,332	19,945	23,611
-Trust Funds	12,444	15,600	16,871
Less: SI Overhead Recovery	(10,825)	(12,120)	(13,200)
Facilities Services	63,228	65,598	72,333
TOTAL OPERATING FUNDS APPLIED	281,794	312,104	345,838
TRANSFERS (Non-Approp. Trust Funds)			
Plant Funds	-	-	4,038
Unrestricted Purpose Endowments	6,189	3,000	3,423
Restricted Purpose Endowments	6,641	470	(461)
TOTAL TRANSFERS	12,830	3,470	7,000
CHANGE IN FUND BALANCES			
-Unrestr. General & Special Purpose	3,679	1,045	2,194
Restricted (Incl. Gov't Grants & Contr.)	4,371	931	(1,474)
Federal (Major Scientific Instrument.)	370	(370)	0
TOTAL CHANGE IN FUND BALANCES	8,420	1,606	720
FUND BALANCES - END OF YEAR			
Unrestricted & Special Purpose	47,109	48,154	50,348
Restricted (Incl. Gov't Grants & Contr.)	20,947	21,878	20,404
Federal (Major Scientific Instrument.)	370	0	0
TOTAL OPERATING FUND BALANCES	68,426	70,032	70,752
FEDERAL CONSTRUCTION APPROPRIATIONS	34,695	41,211	51,516
TOTAL FEDERAL APPROPRIATIONS	245,935	266,690	307,690

SMITHSONIAN INSTITUTION

Appropriation: Salaries and Expenses

Appropriation language and citations:

20 U.S.C. 41 provides for the establishment and operation of the Smithsonian Institution "...for the increase and diffusion of knowledge among men..." This section delineates the full scope of Smithsonian authority. Examples of secondary authorities within this primary authority may be cited as follows:

1. For necessary expenses of the Smithsonian Institution, as authorized by law, including research in the fields of art, science, and history;

20 U.S.C. 50, 53a, 69, 75b, 76bb, 77a, 78, 80a, 80m provide that (1) "...all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens...shall be so arranged and classified...as best to facilitate the examination and study of them..." (2) "Appropriations are authorized for...the making of solar observations at high altitudes..." (3) "The Secretary of the Smithsonian Institution is hereby authorized...to continue independently or in cooperation anthropological researches among the American Indians and the natives of lands under the jurisdiction or protection of the United States..." (4) "The Gallery shall function as a free public museum for the exhibition and study of portraiture and statuary depicting men and women who have made significant contributions to the history, development, and culture of the people of the United States and of the artists who created such portraiture and statuary." (5) "The Joseph H. Hirshhorn Museum and Sculpture Garden...shall be used for the storage, exhibition, and study of works of art..." (6) "The national air and space museum shall...provide educational material for the historical study of aviation and space flight." (7) "The Secretary of the Smithsonian Institution is authorized to cooperate with any State, educational institution, or scientific organization in the United States for continuing paleontological investigations..." (8) "It shall be equipped with a study center for scholarly research into the meaning of war, its effect on civilization, and the role of the Armed Forces..." (9) "...the Board may...conduct programs of research and education (in the Museum of African Art)..."

2. development, preservation, and documentation of the National Collections;

20 U.S.C. 50, 50a, 59, 69, 75e, 76c, 76cc(a), 77a, 80a, 80m, 81 provide that (1) "...all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens...shall be delivered to such persons as may be authorized by the Board of Regents to receive them, and shall be so arranged and classified...as best to facilitate the examination and study of them..." (2) "The Smithsonian Institution is authorized to include in its estimates of appropriations such sums as may be needful for the preservation and maintenance of the John Gellatly art collection." (3) "All collections of rocks, minerals, soils, fossils, and objects of natural history, archaeology, and ethnology...when no longer needed for investigations in progress shall be deposited in the National Museum." (4) "The Secretary of the Smithsonian Institution is hereby authorized...to continue independently or in cooperation...the excavation and preservation of archaeological remains." (5) "...the Board may - (1) purchase, accept, borrow, or otherwise acquire portraiture, statuary, and other items for preservation, exhibition, or study." (6) "...the Regents are authorized...to acquire (by purchase or otherwise) and

sell contemporary works of art or copies thereof..." (7) "There is established in the Smithsonian Institution a Board of Trustees...which shall have the sole authority (i) to purchase or otherwise acquire...works of art for the Joseph H. Hirshhorn Museum and Sculpture Garden..." (8) "The national air and space museum shall...collect, preserve, and display aeronautical and space flight equipment of historical interest and significance..." (9) "...the Smithsonian Institution shall collect, preserve, and exhibit military objects of historical interest and significance." (10) "The National Zoological Park is placed under the direction of the Regents of the Smithsonian Institution, who are authorized to transfer to it any living specimens, whether of animals or plants, in their charge, to accept gifts for the park...to make exchanges of specimens..." (11) "...the Board may purchase, accept, borrow or otherwise acquire additional works of art or any other real or personal property for the Museum (of African Art); preserve, maintain, restore...or otherwise hold any property of whatsoever nature acquired..."

3. presentation of public exhibits and performances;

20 U.S.C. 75b, 76c, 76bb, 77a, 80a, 80m provide that (1) "The Gallery shall function as a free public museum for the exhibition and study of portraiture and statuary..." (2) "In order to encourage the development of contemporary art and to effect the widest distribution and cultivation in matters of such art, the Regents are authorized to...conduct exhibitions..." (3) "The Joseph H. Hirshhorn Museum and Sculpture Garden...shall be used for the storage, exhibition, and study of works of art..." (4) "The national air and space museum shall...collect, preserve, and display aeronautical and space flight equipment of historical interest and significance..." (5) "...the Smithsonian Institution shall collect, preserve and exhibit military objects of historical interest and significance. (6) "...the Board may...display...any property of whatsoever nature acquired (for the Museum of African Art)..."

4. collection, preparation, dissemination, and exchange of information and publications;

20 U.S.C. 53a provides that "Appropriations are authorized for the...preparation of manuscripts, drawings, and illustrations for publication."

44 U.S.C. 1719 provides that "For the purpose of more fully carrying into effect the convention concluded at Brussels on March 15, 1886, and proclaimed by the President of the United States on January 15, 1889, there shall be supplied to the Library of Congress not to exceed one hundred and twenty-five copies each of all Government publications, including the daily and bound copies of the Congressional Record, for distribution, through the Smithsonian Institution, to foreign governments which agree to send to the United States similar publications of their governments for delivery to the Library of Congress."

5. conduct of education, training, and museum assistance programs;

20 U.S.C. 65a provides "The Director of the National Museum under the direction of the Secretary of the Smithsonian Institution shall - (1) cooperate with museums and their professional organizations in a continuing study of museum problems and opportunities, both in the United States and abroad; (2) prepare and carry out programs by grant, contract, or directly for training career employees in museum practices...(3) prepare and distribute significant museum publications;

(4) perform research on, and otherwise contribute to, the development of museum techniques..."

20 U.S.C. 77a provides that "The national air and space museum shall...provide educational material for the historical study of aviation and space flight."

20 U.S.C. 79a provides that "The purpose of setting aside such an area [Barro Colorado Island] is to preserve and conserve its natural features...thus providing a place where duly qualified students can make observations and scientific investigations for increase of knowledge, under such conditions and regulations as may be prescribed by the Smithsonian Institution."

20 U.S.C. 79e as amended by P.L. 96-89 and P.L. 98-57 provides that "There are authorized to be appropriated annually... such sums as are necessary for the administration of sections 79-79e of this title and for the maintenance of laboratory or other facilities..."

The Panama Canal Treaty and ancillary agreements vest in the Smithsonian Tropical Research Institute responsibility to serve as custodian of the Barro Colorado Nature Monument. The Panama Canal Act of 1979, P.L. 96-70, implements the provisions of the Panama Canal Treaty.

20 U.S.C. 80m provides that "...the Board may...conduct programs of research and education (in the Museum of African Art)..."

6. maintenance, alteration, operation, lease (for terms not to exceed ten years), and protection of buildings, facilities, and approaches;

20 U.S.C. 53a, 76g, 76ee, 79b, 80m, 81 provide that (1) "Appropriations are authorized for the maintenance of the Astrophysical Observatory and...for repairs and alterations of buildings and grounds occupied by the Smithsonian Institution in the District of Columbia and elsewhere..." (2) "There are authorized to be appropriated annually such sums as may be necessary to maintain and administer the Gallery..." (3) "There is authorized to be appropriated...such additional sums as may be necessary for the maintenance and operation of such museum and sculpture garden." (4) "The Smithsonian Institution shall...be responsible for the construction and maintenance of laboratory and other facilities on the area provided for the use of students authorized to carry on studies within the confines of the area..." (5) "...the Board may...preserve, maintain...any property of whatsoever nature acquired (for the Museum of African Art)..." (6) "The National Zoological Park is placed under the direction of the Regents of the Smithsonian Institution, who are authorized...to administer and improve the said Zoological Park for the advancement of science and the instruction and recreation of the people."

7. not to exceed \$_____for services as authorized by 5 U.S.C. 3109;

5 U.S.C. 3109 provides that "When authorized by an appropriation or other statute, the head of an agency may procure by contract the temporary (not in excess of 1 year) or intermittent services of experts or consultants or an organization thereof, including stenographic reporting services."

8. up to 5 replacement passenger vehicles;

31 U.S.C. 638a provides that "Unless specifically authorized by the appropriation concerned or other law, no appropriation shall be expended to purchase or hire passenger motor vehicles for any branch of the Government other than those for..."

9. purchase, rental, repair, and cleaning of uniforms for employees;

5 U.S.C. 5901 provides that "There is authorized to be appropriated annually to each agency of the Government of the United States...on a showing of necessity or desirability, an amount not to exceed \$125 multiplied by the number of employees of the agency who are required by regulation or statute to wear a prescribed uniform in the performance of official duties and who are not being furnished with the uniform."

40 U.S.C. 193t provides that "The special police provided for in section 193n of this title [Smithsonian Institution]...may be furnished, without charge, with uniforms and such other equipment as may be necessary for the proper performance of their duties..."

10. of which not to exceed \$_____ for the instrumentation program shall remain available until expended

Wording added by the Congress in Public Law 100-446 making appropriations for the Department of the Interior and related agencies for the fiscal year 1989 to permit the Institution to establish a no-year sub-account within the Salaries and Expenses account for the development of major scientific instrumentation.

31 U.S.C. 718 provides "No specific or indefinite appropriation made subsequent to August 24, 1912, in any regular annual appropriation Act shall be construed to be permanent or available continuously without reference to a fiscal year unless it belongs to one of the following...or unless it is made in terms expressly providing that it shall continue available beyond the fiscal year for which the appropriation Act in which it is contained makes provision."

11. and, including such funds as may be necessary to support American overseas research centers and a total of \$_____ for the Council of American Overseas Research Centers:

Wording added by the Congress in Public Law 99-190 making appropriations for Department of Interior and Related Agencies in 1986. Public Law 100-446 making appropriations for the Department of the Interior and Related Agencies for the fiscal year 1989 modified reference to add specific dollar sum to be provided to the Council of American Overseas Research Centers.

12. Provided, That funds appropriated herein are available for advance payments to independent contractors performing research services or participating in official Smithsonian presentations.

31 U.S.C. 529 provides that "No advance of public money shall be made in any case unless authorized by the appropriation concerned or other law."

SMITHSONIAN INSTITUTION

Appropriation: Construction and Improvements,
National Zoological Park

Appropriation language and citations:

1. For necessary expenses of planning, construction, remodeling, and equipping of buildings and facilities at the National Zoological Park,

20 U.S.C. 81 provides that "The National Zoological Park is placed under the direction of the Regents of the Smithsonian Institution, who are authorized...to administer and improve the said Zoological Park for the advancement of science and the instruction and recreation of the people."

2. by contract or otherwise,

Wording for clarification only.

3. to remain available until expended.

31 U.S.C. 718 provides "No specific or indefinite appropriation made subsequent to August 24, 1912, in any regular annual appropriation Act shall be construed to be permanent or available continuously without reference to a fiscal year unless it belongs to one of the following...or unless it is made in terms expressly providing that it shall continue available beyond the fiscal year for which the appropriation Act in which it is contained makes provision."

SMITHSONIAN INSTITUTION

Appropriation: Repair and Restoration of Buildings

Appropriation language and citations:

1. For necessary expenses of repair and restoration of buildings owned or occupied by the Smithsonian Institution, by contract or otherwise, as authorized by section 2 of the Act of August 22, 1949 (63 Stat. 623),

20 U.S.C. 53a provides that "Appropriations are authorized...for repairs and alterations of buildings and grounds occupied by the Smithsonian Institution in the District of Columbia and elsewhere..."
2. including not to exceed \$_____ for services as authorized by 5 U.S.C. 3109,

5 U.S.C. 3109 provides that "When authorized by an appropriation or other statute, the head of an agency may procure by contract the temporary (not in excess of 1 year) or intermittent services of experts or consultants or an organization thereof, including stenographic reporting services."
3. to remain available until expended:

31 U.S.C. 718 provides "No specific or indefinite appropriation made subsequent to August 24, 1912, in any regular annual appropriation Act shall be construed to be permanent or available continuously without reference to a fiscal year unless it belongs to one of the following...or unless it is made in terms expressly providing that it shall continue available beyond the fiscal year for which the appropriation Act in which it is contained makes provision."
4. Provided, That contracts awarded for environmental systems, protection systems, and exterior repair or restoration of buildings of the Smithsonian Institution may be negotiated with selected contractors and awarded on the basis of contractor qualifications as well as price.

Wording added to allow for negotiations with the most competent firms for restoration and renovation work where it can be certified that such work must be performed to meet the special needs of historic structures, the protection of collections, or public safety.

5. Provided further, That unexpended balances of amounts previously appropriated for this purpose under the heading "Restoration and renovation of buildings, Smithsonian Institution" may be transferred to and merged with this appropriation and accounted for as one appropriation for the same time period as originally enacted.

Wording added by Congress in Public Law 101-121 making appropriations for Department of Interior and Related Agencies for fiscal year 1990 to implement the change of the name of the appropriation account from "Restoration and Renovation of Buildings" to "Repair and Restoration of Buildings."

SMITHSONIAN INSTITUTION

Appropriation: Construction

Appropriation language and citations:

1. For necessary expenses for construction,

20 U.S.C. 53a provides that "Appropriations are authorized...for repairs and alterations of buildings and grounds occupied by the Smithsonian Institution in the District of Columbia and elsewhere..."

2. to remain available until expended:

31 U.S.C. 718 provides "No specific or indefinite appropriation made subsequent to August 24, 1912, in any regular annual appropriation Act shall be construed to be permanent or available continuously without reference to a fiscal year unless it belongs to one of the following...or unless it is made in terms expressly providing that it shall continue available beyond the fiscal year for which the appropriation Act in which it is contained makes provision."

3. Provided, That notwithstanding any other provision of law, the Institution is authorized to transfer to the State of Arizona, the counties of Santa Cruz and/or Pima, a sum not to exceed \$_____ for the purpose of assisting in the construction or maintenance of an access to the Whipple Observatory.

Wording added to allow the Institution to transfer funds from within this account to assist in providing access to the Whipple Observatory in Arizona.

FY 1990 APPROPRIATION

(Dollars in Thousands)		FY 1990	REORGANIZATIONS	GRAMM-RUDMAN -	REVISED
UNIT		CONGRESSIONAL	AND PERMANENT	HOLLINGS	FY 1990
		APPROPRIATION	REPROGRAMMINGS	SEQUESTERATION	APPROPRIATION
		OF FERS \1			
RESEARCH					
Assistant Secretary for Research		1,780	(165) \2	(29)	1,586
Astrophysical Observatory		11,141	0	(150)	10,991
Smithsonian Tropical Research Institute		6,026	(39)	(77)	5,910
Smithsonian Environmental Research Center		1,632	229 \3	(24)	1,837
National Zoological Park		14,808	0	(197)	14,569
Smithsonian Institution Archives		621	0	(8)	613
Smithsonian Institution Libraries		5,451	34 \4	(73)	5,377
International Environmental Science Program		781	0	(11)	770
Major Scientific Instrumentation		2,176	0	(29)	2,147
Subtotal		44,416	98	(598)	43,800
MUSEUMS					
Assistant Secretary for Museums		1,248	0	(17)	1,231
National Museum of Natural History		28,058	(30) \5	(376)	27,505
National Air and Space Museum		9,989	313 \6	(137)	10,165
National Museum of American History		15,891	(430) \7	(208)	15,218
National Museum of the American Indian		4,000	0	(54)	3,946
National Museum of American Art		5,734	0	(76)	5,581
National Portrait Gallery		4,304	0	(57)	4,212
Hirshhorn Museum and Sculpture Garden		3,556	0	(48)	3,508
Arthur M. Sackler Gallery/Freer Gallery		4,390	0	(59)	4,331
Archives of American Art		1,141	0	(15)	1,126
Cooper-Hewitt Museum		1,482	0	(20)	1,462
National Museum of African Art		3,659	0	(49)	3,610
Anacostia Museum		1,050	(34) \8	(14)	1,002
Conservation Analytical Laboratory		2,628	0	(35)	2,551
Office of Exhibits Central		1,963	0	(26)	1,937
Smithsonian Traveling Exhibition Service		878	(74) \9	(11)	793
Museum Support Center		4,321	0	(58)	4,263
Subtotal		94,292	(255)	(1,260)	92,441

(Dollars in Thousands)		FY 1990	RECOVERY	REORGANIZATIONS	GRAMM-RUDMAN-	REVISED
UNIT	CONGRESSIONAL	OF FERS	AND PERMANENT	SEQUENTATION	APPROPRIATION	APPROPRIATION
PUBLIC SERVICE						
Assistant Secretary for Public Service	1,471	0	0	(19)	1,452	
SI Press	1,286	0	0	(17)	1,269	
Office of Folklife Programs	1,041	0	0	(14)	1,027	
Academic and Educational Programs	897	(44)	0	(12)	841	
Subtotal	4,695	(44)	0	(62)	4,589	
INTERNATIONAL ACTIVITIES						
	889	(35)	74	(12)	916	
ADMINISTRATION						
	20,257	531	(570)	(273)	19,945	
FACILITIES SERVICES						
Office of Design & Construction	2,795	0	0	(38)	2,757	
Office of Protection Services	23,534	0	123	(318)	23,339	
Office of Plant Services	37,675	0	530	(513)	37,692	
Subtotal	64,004	0	653	(869)	63,788	
GRAND TOTAL	228,553	0	0	(3,074)	225,479	

- \1 REFLECTS RECOVERY OF FERS FUNDS TEMPORARILY ALLOCATED TO FUND SPECIAL EMPLOYMENT INITIATIVE COSTS IN FY 1989.
- \2 PERMANENT TRANSFERS OF: ONE POSITION FROM THE NATIONAL MUSEUM OF NATURAL HISTORY, FUNDS TO THE JOSEPH HENRY PAPERS, AND FOUR POSITIONS TO THE SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER.
- \3 PERMANENT TRANSFERS OF: FOUR POSITIONS FROM THE OFFICE OF THE ASSISTANT SECRETARY FOR RESEARCH AND ONE POSITION FROM THE OFFICE OF PLANT SERVICES.
- \4 PERMANENT TRANSFER OF ONE POSITION FROM THE ANAGOSTIA MUSEUM LIBRARY.
- \5 PERMANENT TRANSFER OF ONE POSITION TO THE OFFICE OF THE ASSISTANT SECRETARY FOR RESEARCH.
- \6 PERMANENT TRANSFER OF NINE POSITIONS FROM THE OFFICE OF PLANT SERVICES.
- \7 PERMANENT TRANSFER OF FUNDS RELATED TO RENTAL SPACE AT FULLERTON TO THE OFFICE OF PLANT SERVICES FOR UTILITIES AND RENT AND TO PROTECTION SERVICES FOR SECURITY.
- \8 PERMANENT TRANSFER OF ONE POSITION TO THE SMITHSONIAN INSTITUTION LIBRARIES.
- \9 PERMANENT TRANSFER OF TWO POSITIONS TO THE INTERNATIONAL GALLERY.
- \10 PERMANENT TRANSFER OF TWO POSITIONS FROM THE SMITHSONIAN INSTITUTION TRAVELING EXHIBITION SERVICE.
- \11 PERMANENT TRANSFERS OF: ONE POSITION TO THE OFFICE OF THE ASSISTANT SECRETARY OF EXTERNAL AFFAIRS AND FUNDS TO THE OPLANTS RENTAL ACCOUNT FOR ADDITIONAL ADMINISTRATIVE SPACE.
- \12 PERMANENT TRANSFER OF FUNDS FROM THE NATIONAL MUSEUM OF AMERICAN HISTORY FOR SECURITY AT FULLERTON.
- \13 PERMANENT TRANSFERS OF: ONE POSITION TO THE SMITHSONIAN ENVIRONMENTAL RESEARCH CENTER, NINE POSITIONS TO THE AIR AND SPACE MUSEUM, AND FUNDS FROM THE MUSEUM OF AMERICAN HISTORY FOR UTILITIES AND RENT AT FULLERTON.

SMITHSONIAN INSTITUTION LIBRARIES



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